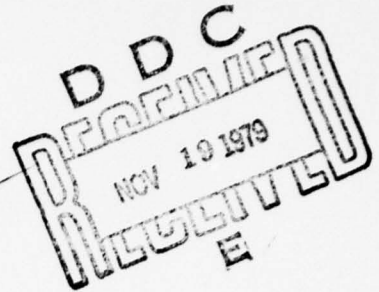


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LEVEL II

2

Research Memorandum 76-2



# AIRCREW TASK ANALYSIS AND TRAINING OBJECTIVES FOR NAP-OF-THE-EARTH FLIGHT

Charles A. Gainer  
U.S. Army Research Institute for the Behavioral and Social Sciences

and

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HUMAN ADAPTABILITY AND ORGANIZATIONAL EFFECTIVENESS TECHNICAL AREA

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February 1976

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9 Research Memorandum 76-2

6 AIRCREW TASK ANALYSIS AND TRAINING  
OBJECTIVES FOR NAP-OF-THE-EARTH FLIGHT

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# AIRCREW TASK ANALYSIS AND TRAINING OBJECTIVES FOR NAP-OF-THE-EARTH FLIGHT

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## AIRCREW TASK ANALYSIS AND TRAINING OBJECTIVES FOR NAP-OF-THE-EARTH FLIGHT

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The purpose of this study was to assist the Army in identifying and developing potential improvements in nap-of-the-earth (NOE) training at the entry and unit levels. To accomplish this purpose, statements of NOE training objectives were derived, based on a detailed analysis of mission requirements and aircrew tasks, and the most promising methods of improving training to meet those objectives were identified. Part I of this study, published as an ARI Research Report, describes the technical approach and methods of the study, the results obtained, and the conclusions and recommendations. As part of the project, a detailed analysis of the functions and tasks required of Army helicopter crews in NOE operations was performed to provide the essential data base for identifying training requirements, and these detailed task descriptions were analyzed to derive specifications of the training objectives that would have to be met to achieve aircrew proficiency in NOE operations. The results are documented in ~~this report~~ Part II of the study. Although the task analysis was performed as a means to the specific ends of this project, the results constitute a significant general contribution to the literature on helicopter aircrew performance and will be useful in several other research applications.

### TASK ANALYSIS

The aircrew tasks were specified and organized according to the mission phase and segment in which the tasks normally are performed and according to the function that is accomplished by a given set of tasks. Each task is stated in a standard verb-object-modifier form, followed by a brief description of the actions that are required in performing it. Any controls or displays that must be operated or used in performing the task are identified, and the possible control settings or adjustments are listed. The outcome or effect of the task is described in terms of the subsystem response. Each task is classified according to whether it is performed as a continuous activity or as a discrete action. The type of stimulus input to the operator performing the task is listed, and the type of sensory feedback that allows him to determine the adequacy of his response is identified. The possible decision options that the operator can take as a result of the stimulus input and feedback are identified and listed. The criticality of the task performance is rated in terms of whether or not successful performance is vital to the primary mission objective and whether or not the task must be performed at a precisely constrained moment or sequence in time. Finally, the accuracy requirements or other standards of performance effectiveness are specified where such criteria are meaningful and could be determined.



The contingency performance requirements are specified and organized in a different format. Each set of performance requirements is organized according to the source of the emergency, such as a blade strike or a particular type of system failure. Listed first are all of the available cues that can alert the pilot to the presence and nature of the contingency event. These cues are classified by the sensory process (visual, auditory, kinesthetic, etc.) that discerns them and are numbered in order of precedence. The decision options open to the pilot are listed, including any diagnostic decisions he may have to make. The principal considerations that must be taken into account are listed for each option or diagnosis. Finally, the perceptual and motor response requirements are specified. These are the things that the pilot must perceive and do to recognize the presence and nature of the contingency and to deal with it.

# TASK ANALYSIS

MISSION PHASE FUNCTION: RECEIVE BRIEFING			SEGMENT: MISSION PLANNING			SEGMENT: MISSION PLANNING			SEGMENT: MISSION PLANNING					
TASK			OPERATOR ACTION			CONTROL			SUBSYSTEM: N/A					
VERB	OBJECT	MODIFIER	OPERATOR ACTION			NAME	OPTIONS	EQUIPMENT RESP.	FEEDBACK	STIMULUS INPUT	OPERATOR DECISION OPTIONS	CRIT. RESP.	ACCURACY REQUIRED	COMMENTS
1. ACQUIRE	INFORMATION	SITUATION	RECEIVES SITUATION INFORMATION RELATIVE TO: ENEMY POSITION, STRENGTH, ETC. FRIENDLY POSITION, STRENGTH, ETC. ATTACHMENTS AND DETACHMENTS			MAPS/CHARTS	N/A	N/A	D / /	VISUAL - MAPS CHARTS AURAL - BRIEFING OFFICER	N/A	2	N/A*	MUST UNDERSTAND AND CORRECTLY INTERPRET SITUATION INFORMATION TO PERFORM MISSION SUCCESSFULLY
2. ACQUIRE	INFORMATION	MISSION	RECEIVES MISSION INFORMATION, I.E., RECON (WITH ENGAGEMENT) RECON (WITHOUT ENGAGEMENT) TROOP SUPPORT MEDICAL ATTACHMENTS AERIAL PARTY			MAPS/CHARTS	N/A	N/A	D / /	VISUAL - MAPS CHARTS AURAL - BRIEFING OFFICER	N/A	2	N/A	MUST UNDERSTAND AND CORRECTLY INTERPRET MISSION INFORMATION TO PERFORM MISSION SUCCESSFULLY
3. ACQUIRE	INFORMATION	MISSION EXECUTION	RECEIVES INFORMATION AND DIRECTION ON HOW MISSION IS TO BE PERFORMED			MAPS/CHARTS	N/A	N/A	D / /	VISUAL - MAPS CHARTS AURAL - BRIEFING OFFICER	N/A	2	N/A	MUST UNDERSTAND AND CORRECTLY INTERPRET MISSION INFORMATION TO PERFORM MISSION SUCCESSFULLY
4. ACQUIRE	INFORMATION	COMMAND AND SIGNAL	RECEIVES INFORMATION AND DIRECTION RELATIVE TO: SOI LAND SIGNS RADIO FREQUENCIES CHANGE OF COMMAND			SOI	N/A	N/A	D / /	AURAL BY BRIEFING OFFICER VISUAL--SOI	N/A	2	N/A	FAILURE TO UNDERSTAND AND CORRECTLY INTERPRET INFORMATION COULD RESULT IN MISSION FAILURE
5. ACQUIRE	INFORMATION	ADMINISTRATIVE AND LOGISTICS	RECEIVES INFORMATION AND DIRECTION RELATIVE TO: FUEL, ARMAMENT, LOCATIONS MAINTENANCE, WEAPONS WEATHER PREDICTION			MAPS/CHARTS	N/A	N/A	D / /	VISUAL - MAPS CHARTS AURAL - BRIEFING OFFICER	N/A	2	N/A	FAILURE TO UNDERSTAND AND CORRECTLY INTERPRET INFORMATION COULD RESULT IN MISSION FAILURE
														*IT IS ASSUMED THAT THE PILOT/COPILOT WILL RECEIVE ALL INFORMATION WHICH IS PRESENTED DURING THE BRIEFING.

# TASK ANALYSIS

MISSION PHASE PRELIGHT  
FUNCTION SELECT MAPS

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. LOCATE	SHEETS	MAPS	LOCATE IN CASE OPMS OR BRIEFING ROOM THE MAPS WHICH WILL BE AVAILABLE TO MISSION PLANNING
2. CHOOSE	MAPS	PLANNING	SELECT THOSE TYPES OF MAPS WHICH WILL BEST BE USED IN PLANNING
3. CHOOSE	MAPS	INFLIGHT	SELECT THOSE MAP SCALES AND TYPES WHICH WILL BE USED EASIEST IN COCKPIT

SEGMENT MISSION PLANNING  
SUBSYSTEM MAPS

NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK		STIMULUS INPUT
			V	A	
MAPSHEETS	NONE	N/A	0	0	BRIEFING ORDER
MAPS	SCALES TYPES QUANTITY	N/A	0	0	BRIEFING ORDER
MAPS	SCALES TYPES QUANTITY	N/A	0	0	BRIEFING ORDER

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
	2	N/A	PILOT AND NAVIGATOR ASSEMBLE THE MAPS WHICH COVER THE AREA OF OPERATION
SCALES TYPES QUANTITY	2	N/A	A. CHOOSE SELECT MAPS TO AID IN TERRAIN INTERPRETATION B. LARGE SCALE MAPS FOR GENERAL OVERVIEW OF TERRAIN AND OVERALL SITUATION C. SMALL SCALE MAPS FOR DETAILED PLANNING ROUTE D. AERIAL PHOTO E. FLIGHT HAZARDS
SCALES TYPES QUANTITY	2	N/A	NAVIGATOR SHOULD USE MAPS WHICH HE CAN SEE AND HANDLE EASILY IN THE COCKPIT

# TASK ANALYSIS

SEGMENT MISSION PLANNING  
SUBSYSTEM MAPS/CHARTS

MISSION PHASE PRELIGHT  
FUNCTION PERFORM MAP STUDY TO ANALYZE TERRAIN

TASK		OPERATOR ACTION		CONTROL		EQUIPMENT RESP.		FEEDBACK		STIMULUS INPUT		OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
VERB	OBJECT	MODIFIER		NAME	OPTIONS			BY	VIA	OTHER					
1. SCAN	MAPS		GENERAL OVERVIEW: FRIENDLY AREAS, HOSTILE AREAS, ARMY UNITS	MAP	NONE	N/A	D ✓				BRIEFING ORDER	NONE	2	N/A	
2. PLOT	LOCATIONS		IDENTIFIES AND NOTATES FRIENDLY POSITIONS, ENEMY LOCATIONS, ARTY POSITIONS, AVOID AREAS	MAP	NONE	N/A	D ✓				BRIEFING ORDER	NONE	2	ACCURATE TO THE NEAREST SIX DIGIT COORDINATE	PLOTTED COORDINATES BELOW SPECIFIED COORDINATE MAY RESULT IN FAILURE OF MISSION OBJECTIVE
3. SELECT	SITES	AMBUSH	DETERMINES POSSIBLE AMBUSH SITES	MAP	NONE	N/A	D ✓				BRIEFING ORDER	RIDGES, CONCEALMENT	2	ACCURATE TO THE NEAREST SIX DIGIT COORDINATE	PLOTTED COORDINATES BELOW SPECIFIED COORDINATE MAY RESULT IN FAILURE OF MISSION OBJECTIVE
4. EVALUATE	MAP	SYMBOL	STUDY TERRAIN FEATURES CHECK FOR OBSTACLES CHECK RELATIVE ALTITUDES INTERPRET CONTOUR LINES VISUALIZE HORIZONTAL PICTURE	MAP	NONE	N/A	D ✓				BRIEFING ORDER	NONE	2	N/A	MISINTERPRETATION OR ERRONEOUS PLOTTING OF COORDINATES, CONTOUR LINES, ETC. MAY RESULT IN FAILURE OF MISSION OBJECTIVE



# TASK ANALYSIS

SEGMENT MISSION PLANNING

MISSION PHASE PREFLIGHT  
FUNCTION DETERMINE ROUTE OF FLIGHT AND CHECKPOINTS

TASK		OPERATOR ACTION		NAME	CONTROL	EQUIPMENT RESP.	FEEDBACK			STIMULUS INPUT	OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
VERB	OBJECT	MODIFIER					YES	NO	OTHER					
1. DETERMINE	ROUTE	FLIGHT	SELECT BEST COURSE IN TERMS OF: EASE OF NAVIGATION-CHECKPOINTS MASKING ABILITY SHORTEST ROUTE THREAT FEATURES FORCED LANDING AREAS AVOIDANCE OF FRIENDLY ARTY	N/P	NONE	N/A	0	1		BRIEFING ORDER	SEE OPERATOR ACTION	2	TIME: 160 SEC. OF ETA (CP TO CP) NAV. NEAREST SIX DIGIT COORDINATE HEADING 15° OF THAT DESIRED	PLOTTED COORDINATES BELOW SPECIFIED MISSION OBJECTIVE IN FAILURE OF MISSION OBJECTIVE
2. SELECT	CHECKPOINT		SELECT CHECKPOINTS IN TERMS OF: EASY TO LOCATE EASY TO IDENTIFY MAN-MADE FEATURES EASY TO IDENTIFY DETERMINE PROXIMITY AND QUANTITY	N/P	NONE	N/A	0	1		BRIEFING ORDER	SEE OPERATOR ACTION	2	TIME: 160 SEC. OF ETA (CP TO CP) NAV. NEAREST SIX DIGIT COORDINATE HEADING 15° OF THAT DESIRED	PLOTTED COORDINATES BELOW SPECIFIED MISSION OBJECTIVE IN FAILURE OF MISSION OBJECTIVE

SEGMENT MISSION PLANNING

[illegible][illegible][illegible]

## TASK ANALYSIS

[illegible]

# TASK ANALYSIS

MISSION PHASE: PRELIGHT  
SUBSYSTEM: MISSION PLANNING

VERB	TASK		MODIFIER	OPERATOR ACTION
	OBJECT			
1. SELECT	MAP			SELECT MAP DEPICTING ENGAGEMENT AREA
2. PLOT	POSITIONS	ENEMY FRIENDLY ARTILLERY		LOCATES AND IDENTIFIES POSITIONS OF PERSONNEL, EQUIPMENT, ARTILLERY OF ENEMY AND FRIENDLY FORCES
3. EVALUATE	POSITION	ENEMY FRIENDLY ARTILLERY		DETERMINES MOST EFFECTIVE AERIAL OBSERVATION POSITION BASED ON EVALUATION OF TACTICAL SITUATION
4. PLOT	POSITIONS	AERIAL OBSERVATION		SELECTS COURSE TO AND COORDINATES OF FIRING POSITION

SEGMENT: MISSION PLANNING  
SUBSYSTEM

NAME	CONTROL	OPTIONS	EQUIPMENT RESP	FEEDBACK				STIMULUS INPUT
				D	V	A	OTHER	
MAP		N/A	N/A	0	✓			VISUALLY INSPECT MAPS
MAP		N/A	N/A	0	✓			MAP OF ENGAGEMENT AREA
MAP		N/A	N/A	0	✓			MAP OF ENGAGEMENT AREA
MAP		N/A	N/A	0	✓			MAP OF ENGAGEMENT AREA

OPERATOR DECISION OPTIONS	CRIT. RESP	ACCURACY REQUIRED	COMMENTS
N/A	2	N/A	FAILURE TO SELECT CORRECT MAP MAY LEAD TO MISSION FAILURE
WHICH UNITS TO PLOT	2	ACCURATE TO THE NEAREST SIX DIGIT COORDINATE	CORRECT IDENTIFICATION AND LOCATION OF ALL FORCES, ARMAMENT, ETC. ESSENTIAL TO MISSION SUCCESS
N/A	2		EFFECTIVE EVALUATION REQUIRED TO SELECT BEST AERIAL OBSERVATION POSITION
N/A	2	ACCURATE TO THE NEAREST SIX DIGIT COORDINATE	INCORRECT PLOT OF AERIAL OBSERVATION POSITION WILL LEAD TO MISSION DEGRADATION OR FAILURE

# TASK ANALYSIS

SEGMENT MISSION PLANNING  
SUBSYSTEM

MISSION PHASE PREFLIGHT  
FUNCTION SELECT AERIAL FIRING POSITION (GUNSHIP)

TASK			OPERATOR ACTION			CONTROL			EQUIPMENT RESP			FEEDBACK			STIMULUS INPUT			OPERATOR DECISION OPTIONS			CRIT RESP			ACCURACY REQUIRED			COMMENTS		
VERB	OBJECT	MODIFIER				NAME	OPTIONS																						
1. SELECT	MAP		SELECT MAP DEPICTING ENGAGEMENT AREA			MAP	N/A		N/A		D /									N/A	2		N/A				FAILURE TO SELECT CORRECT MAP MAY LEAD TO MISSION FAILURE		
2. PLOT	POSITIONS	ENEMY FRIENDLY ARMOR ARTILLERY	LOCATES AND IDENTIFIES POSITIONS OF PERSONNEL, EQUIPMENT, ARTILLERY OF ENEMY AND FRIENDLY FORCES			MAP	N/A		N/A		D /									N/A	2		ACCURATE TO THE NEAREST SIX DIGIT COORDINATE				CORRECT IDENTIFICATION AND LOCATION OF ALL FORCES, ARMAMENT, ETC. ESSENTIAL TO MISSION SUCCESS		
3. EVALUATE	POSITIONS	ENEMY FRIENDLY ARMOR ARTILLERY	DETERMINES MOST EFFECTIVE AERIAL FIRING POSITION BASED ON EVALUATION OF TACTICAL SITUATION			MAP	N/A		N/A		D /									N/A	2		YES				EFFECTIVE EVALUATION REQUIRED TO SELECT BEST AERIAL FIRING POSITION		
4. PLOT	POSITIONS	AERIAL FIRING	SELECTS COURSE TO AND COORDINATES OF FIRING POSITION			MAP	N/A		N/A		D /									N/A	2		ACCURATE TO THE NEAREST SIX DIGIT COORDINATE				INCORRECT PLOT OF FIRING POSITION WILL LEAD TO MISSION DEGRADATION OR FAILURE		



## TASK ANALYSIS

[illegible]

## TASK ANALYSIS

[illegible]

## TASK ANALYSIS

[illegible]



[illegible]

# TASK ANALYSIS

MISSION PHASE PRE-FLIGHT  
FUNCTION DETERMINE AIRSPEED

SEGMENT MISSION PLANNING  
SUBSYSTEM

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. SELECT	MAP	FLIGHT PATH	REFERS TO MAP DEPICTING FLIGHT PATH OF MISSION
2. PLOT	DISTANCES	FLIGHT PATH LEGS	DETERMINE DISTANCE OF EACH LEG AND TOTAL FROM BASE TO ENGAGEMENT AREA AND RETURN
3. CHECK	ELEVATION	TERRAIN	NOTE TERRAIN FEATURES AFFECTING AIRSPEED, CONDUIT INTERVAL, AND SPOT ELEVATIONS
4. CHECK	REPORTS	WEATHER	NOTE WEATHER CONDITIONS AFFECTING AIRSPEED
5. DETERMINE	GROSS WEIGHT	AIRCRAFT	DETERMINE GROSS WEIGHT OF HELICOPTER AS APPLICABLE TO AIRSPEED
6. CHECK	TIME	MISSION	REFER TO BRIEFING FOR TIME CONSTRAINTS OF MISSION
7. CHECK	PERFORMANCE DATA	AIRCRAFT	REFER TO AIRCRAFT PERFORMANCE DATA UNDER MISSION CONDITIONS ABOVE
8. CALCULATE	AIRSPEED	AIRCRAFT	UTILIZING THE INFORMATION GATHERED IN (1) THROUGH (7), CALCULATE ACQUIRED AIRSPEED FOR MISSION

NAME	CONTROL		EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
	OPTIONS	NAME		D	V	A	
MAP	N/A		N/A	D ✓			FLIGHT PATH MAP
MAP	N/A		N/A	D ✓			FLIGHT PATH MAP
MAP	N/A		N/A	D ✓			FLIGHT PATH MAP
REPORT	N/A		N/A	D ✓			WEATHER REPORT
CHARTS	N/A		N/A	D ✓			HELICOPTER, AIRCRAFT, WEIGHT, INFORMATION
OPORD BRIEFING	N/A		N/A	D ✓			BRIEFING
REPORTS	N/A		N/A	D ✓			AIRCRAFT PERFORMANCE DATA REPORTS
COMPUTER PLOTTER	N/A		N/A	D ✓			DATA FROM (1) THROUGH (7) ABOVE

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
N/A	2	N/A	MUST SELECT CORRECT MAP DEPICTING FLIGHT PATH OF MISSION
N/A	2	ACCURATE TO THE NEAREST SIX DIGIT COORDINATE 100 METERS	INCORRECT PLOT MAY RESULT IN MISSION DEGRADATION
N/A	2	±10' ELEVATION	MUST DETECT, IDENTIFY AND EVALUATE TERRAIN FEATURES AFFECTING AIRSPEED
N/A	2	N/A	MUST CORRECTLY IDENTIFY AND EVALUATE WEATHER CONDITIONS THAT AFFECT AIRSPEED
N/A	2	±100 LBS	MUST CALCULATE WEIGHT ACCURATELY TO OBTAIN VALID AIRSPEED DETERMINATION
N/A	2	±60 SECS. OF ETA	MUST CORRECTLY IDENTIFY ETA'S
N/A	2	GO-NO GO	MUST CORRECTLY IDENTIFY AND EVALUATE AIRCRAFT PERFORMANCE DATA UNDER MISSION CONSTRAINTS
N/A	2	±5 KTS	MUST BE ABLE TO CORRELATE INFORMATION RELEVANT TO AIRSPEED AND MAKE ACCURATE DETERMINATION BASED ON THESE DATA

## TASK ANALYSIS-

[illegible]

# TASK ANALYSIS

MISSION PHASE PRELIGHT  
FUNCTION DETERMINE FUEL REQUIREMENT

SECRET  
SUBSYSTEM

VERB	TASK		OPERATOR ACTION	
	OBJECT	MODIFIER	OBJECT	ACTION
1. CHECK	MAP	FLIGHT PATH	REFER TO MAP(S) DEPICTING PROPOSED FLIGHT PATH	
2. CALCULATE	DISTANCE	TOTAL	CALCULATE DISTANCE LEGS BETWEEN CHECKPOINTS AND DETERMINE TOTAL DISTANCE COVERED BY MISSION	
3. CHECK	REPORTS	WEATHER	REVIEW WEATHER DATA FOR CONDITIONS AFFECTING FUEL CONSUMPTION	
4. CHECK	MAP	FLIGHT PATH	REVIEW FLIGHT PLAN AND NOTE CONSTRAINTS OF ALTITUDE, AIRSPEED, AND TIME THAT CORRELATE TO FUEL CONSUMPTION	
5. CALCULATE	FUEL	REQUIREMENTS	BASED ON ABOVE DATA AND ENGINE PERFORMANCE SPECIFICATIONS, DETERMINE: MINIMUM FUEL NEEDED RESERVE FUEL MAXIMUM FUEL ALLOWABLE	

NAME	CONTROL		EQUIPMENT RESP.	FEEDBACK		STIMULUS INPUT
	OPTIONS	OTHER		V	A	
MAP	N/A		N/A	0	/	FLIGHT PATH MAP (VISUAL)
MAP	N/A		N/A	0	/	VISUAL (FLIGHT PATH MAP)
REPORT	N/A		N/A	0	/	VISUAL (WEATHER REPORT)
MAP	N/A		N/A	0	/	VISUAL (MAP)
CHART	N/A		N/A	0	/	VISUAL (ENGINE PERFORMANCE DATA)

OPERATOR DECISION OPTIONS	CRIT. RESP.	ACCURACY REQUIRED	COMMENTS
N/A	2	N/A	MUST SELECT CORRECT MAP AND IDENTIFY FLIGHT PATH
N/A	2	ACCURATE TO THE NEAREST SIX DIGIT COORDINATE	MUST ACCURATELY CALCULATE DISTANCE BETWEEN CHECKPOINTS AND TOTAL DISTANCES
N/A	2	N/A	MUST RECOGNIZE AND EVALUATE WEATHER CONDITIONS AFFECTING FUEL CONSUMPTION
N/A	2	N/A	MUST EVALUATE ALTITUDE AND AIRSPEED CONDITIONS AND THEIR EFFECT ON FUEL CONSUMPTION
USE COMPUTER FOR FUEL REQUIREMENT CALCULATIONS USE CHART FOR FUEL REQUIREMENT CALCULATIONS USE CHART FOR FUEL REQUIREMENT CALCULATIONS	2	FUEL REQUIRED MINIMUM FUEL RESERVE FUEL MAXIMUM FUEL	MUST INTEGRATE FACTORS OF DISTANCE, ALTITUDE, AIRSPEED, AND WEATHER PERFORMANCE AND THEIR RELATION TO FUEL CONSUMPTION



# TASK ANALYSIS

MISSION PHASE: PREFLIGHT  
FUNCTION: SELECT ARMAMENT

SEGMENT: MISSION PLANNING

SUBSYSTEM: MISSION PLANNING

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. REVIEW	OBJECTIVE	MISSION	IDENTIFY TARGETS, POTENTIAL THREATS, ENEMY WEAPONRY, FORCE DEPLOYMENT
2. SELECT	TARGETS	MISSION	DETERMINE PRIMARY AND SECONDARY TARGETS
3. SELECT	ARMAMENT	OFFENSIVE	DETERMINE MOST EFFECTIVE ARMAMENT AGAINST SELECTED TARGETS
4. DETERMINE	THREAT(S)	ENEMY	IDENTIFY POTENTIAL ENEMY THREAT(S) AND NATURE OF THREAT(S)
5. SELECT	ARMAMENT	DEFENSIVE	DETERMINE MOST EFFECTIVE ARMAMENT(S) TO COUNTER THREAT(S)

NAME	CONTROL	OPTIONS	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
N/A	N/A	N/A	N/A	D ✓	BRIEFING DATA (VISUAL)
MAP OPORD	N/A	N/A	N/A	D ✓	MAP (VISUAL)
CHART TARGET DATA	N/A	N/A	N/A	D ✓	ARMAMENT LIST (VISUAL)
MAP	N/A	N/A	N/A	D ✓	MAP (VISUAL)
CHART	N/A	N/A	N/A	D ✓	ARMAMENT LIST (VISUAL)

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
N/A	2	N/A	MUST DETECT, IDENTIFY AND EVALUATE THREATS, ENEMY WEAPONRY, AND VERBAL INFORMATION
	2	ACCURATE TO THE NEAREST SIX DIGIT COORDINATE	MUST IDENTIFY AND DETERMINE LOCATION OF TARGET(S)
ROCKETS, MISSILES, SMALL ARMS--CHOOSE FROM TYPES OF ARMAMENT AVAILABLE	2		MUST EVALUATE TARGET DEFENSE CAPABILITY AND SELECT MOST EFFECTIVE OFFENSIVE ARMAMENT
SUBSISTENCE, PERSONNEL, ARTILLERY	2	ACCURATE TO THE NEAREST SIX DIGIT COORDINATE	MUST IDENTIFY AND DETERMINE LOCATION OF THREAT
ROCKETS, MISSILES, SMALL ARMS--CHOOSE FROM TYPES OF ARMAMENT AVAILABLE	2		MUST EVALUATE THREAT OFFENSIVE CAPABILITY AND SELECT MOST EFFECTIVE DEFENSIVE ARMAMENT

## TASK ANALYSIS

[illegible]

# TASK ANALYSIS

MISSION PHASE: PREFLIGHT  
FUNCTION: CALCULATE WEIGHT AND BALANCE (UTILITY)

SEGMENT: MISSION PLANNING  
SUBSYSTEM

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. CHECK	INSTRUCTIONS	WEIGHT AND BALANCE	REFER TO TABLES GIVING WEIGHT/MOMENT INFORMATION
2. COMPUTE	WEIGHT	TAKEOFF AND LANDING	USING WEIGHT AND MOMENT TABLES, COMPUTE WEIGHT AND BALANCE OF AIRCRAFT
3. CHECK	LIMITS	LOADING	ASCERTAIN THAT LOADING LIMITS AND CG LOCATION ARE WITHIN AIRCRAFT LIMITATIONS
4. COMPLETE	FORM	WEIGHT AND BALANCE	FILL OUT AND FILE WEIGHT AND BALANCE REPORT

NAME	CONTROL		EQUIPMENT RESP	FEEDBACK		STIMULUS INPUT
	OPTIONS	OTHER		VIA	OTHER	
WEIGHT AND MOMENT INSTRUCTIONS	N/A		N/A	D ✓		CHART
WEIGHT AND MOMENT INSTRUCTIONS FORM AND RECORD	N/A		N/A	D ✓		
AIRCRAFT SPECIFICATIONS	N/A		N/A	D ✓		
WEIGHT AND BALANCE REPORT	N/A		N/A	D ✓		

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
N/A	3	N/A	MUST LOCATE CORRECT SHEETS
N/A	3	+10 LBS	MUST MANUALLY COMPUTE WEIGHT AND MOMENT DATA ACCURATELY
N/A	3	WITHIN TOLERANCE	COMPARISON OF RECEIVED WEIGHT AND BALANCE AND AIRCRAFT LIMITATIONS VALUES MUST BE WITHIN AIRCRAFT TOLERANCE
N/A	3		COMPLETED FORM MUST ACCURATELY REFLECT AIRCRAFT CONDITION IN TERMS OF WEIGHT AND BALANCE

# TASK ANALYSIS

MISSION PHASE PREFLIGHT SEGMENT: MISSION PLANNING  
FUNCTION: FILE FLIGHT PLAN

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION	
			FORM	DESCRIPTION
1. OBTAIN	FORM	FLIGHT PLAN	OBTAIN APPROPRIATE FLIGHT PLAN FORM	
2. COMPLETE	FORM	FLIGHT PLAN	ENTER FLIGHT PLAN DATA AS REQUIRED	
3. DISTRIBUTE	FORM	FLIGHT PLAN	FILE AND/OR DISTRIBUTE FLIGHT PLAN FORM AS REQUIRED	

SEGMENT: MISSION PLANNING  
SUBSYSTEM

CONTROL		EQUIPMENT RESP	FEEDBACK VIA OTHER	STIMULUS INPUT
NAME	OPTIONS			
FLIGHT PLAN FORM	N/A	N/A	D /	VISUAL
FLIGHT PLAN FORM	N/A	N/A	D /	VISUAL
FLIGHT PLAN FORM	N/A	N/A	D /	VISUAL

OPERATOR DECISION OPTIONS	CRIT. RESP.	ACCURACY REQUIRED	COMMENTS
N/A	3	N/A	SELECT APPROPRIATE FLIGHT PLAN FORM
N/A	3	N/A	ENTER FLIGHT PLAN DATA RELATIVE TO COURSE, TIMES, ETC.
N/A	3	N/A	FILE/DISTRIBUTE FLIGHT PLAN FORM



# TASK ANALYSIS

MISSION PHASE PRELIGHT  
FUNCTION BRIEF CREW

SEGMENT MISSION COORDINATION  
SUBSYSTEM

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. DESCRIBE	ROUTE	FLIGHT	DESCRIBE GENERAL ENTRY/EXIT RATES FROM BASE TO ENGAGEMENT AREA AND RETURN
2. IDENTIFY	CALL SIGNS AND FREQUENCIES	RADIO	DESIGNATE RADIO CALL SIGNS AND FREQUENCIES TO BE USED DURING MISSION
3. DESCRIBE	FEATURES	TERRAIN	IDENTIFY OBSTACLES, VEGETATION, TERRAIN FEATURES AND FEATURES OF TERRAIN TO BE FLOWN OVER
4. IDENTIFY	CHECKPOINTS		DESCRIBE LOCATION AND FEATURES OF CHECKPOINTS
5. IDENTIFY	PROBLEMS	POSSIBLE	DESCRIBE POTENTIAL PROBLEMS RELATED TO MISSION
6. DESIGNATE	DUTIES	FLIGHT	DESIGNATE FLIGHT DUTIES FOR CREW MEMBERS

CONTROL		EQUIPMENT RESP		FEEDBACK		STIMULUS INPUT	
NAME	OPTIONS			YES	NO		
MAPS	N/A	N/A	D /			N/A	
REPORTS	N/A	N/A	D /			N/A	
MAPS	N/A	N/A	D /			N/A	
MAPS/CHARTS	N/A	N/A	D /			N/A	
N/A	N/A	N/A	D /			N/A	

OPERATOR DECISION OPTIONS	CRIT. RESP	ACCURACY REQUIRED	COMMENTS
N/A	3		
N/A	3		IDENTIFICATION OF CORRECT FREQUENCIES AND CALL SIGNS NECESSARY TO PREVENT MISSION DEGRADATION ON FAILURE
N/A	3		MUST IDENTIFY TERRAIN FEATURES AFFECTING FLIGHT AND MISSION PERFORMANCE
N/A	3		MUST IDENTIFY TERRAIN FEATURES AFFECTING FLIGHT AND MISSION PERFORMANCE
SELECT	3		IDENTIFICATION OF POTENTIAL PROBLEMS NECESSARY TO FORMULATE CONTINGENCY PLANS
CHAIN OF COMMAND NAVIGATION DUTIES PILOT DUTIES	3		IDENTIFICATION AND ALLOCATION OF DUTIES REQUIRED TO PRECLUDE OPERATIONAL OMISSIONS AND DEGRADATION/FAILURE OF MISSION

# TASK ANALYSIS

MISSION PHASE: PREFLIGHT  
SUBSYSTEM: MISSION COORDINATION

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. DESCRIBE	PLAN	FLIGHT	DESCRIBE GENERAL FLIGHT PLAN TO INFORM PASSENGERS OF DURATION, ALTITUDES, ETC.
2. DESCRIBE	PROCEDURE	EMERGENCY	INFORM PASSENGERS OF ACTIONS, DUTIES, PROCEDURES IN THE EVENT OF AN AIRCRAFT EMERGENCY
3. DESCRIBE	PROCEDURE	AIRCRAFT ENTRY/EXIT	DESCRIBE REQUIRED PROCEDURES FOR AIRCRAFT ENTRY/EXIT. DANGERS OF ROTORS, ETC.
4. DESCRIBE	CONSTRAINTS	PASSENGER	DESCRIBE PASSENGER CONSTRAINTS REGARDING MOVEMENT, BEHAVIOR WHILE IN THE AIRCRAFT

SEGMENT: MISSION COORDINATION  
SUBSYSTEM: MISSION COORDINATION

NAME	CONTROL		EQUIPMENT RESP.	FEEDBACK			STIMULUS INPUT
	OPTIONS	NAME		YES	NO	OTHER	
MP	N/A		N/A	D /			N/A
CHECKLIST	N/A		N/A	D /			N/A
CHECKLIST	N/A		N/A	D /			N/A
SOP	N/A		N/A	D /			N/A

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
N/A	3		NONE
N/A	3		IDENTIFICATION OF ACTIONS/PROCEDURES IN EVENT OF EMERGENCY MAY PREVENT DEATH/INJURY AND/OR POSSIBLE LOSS OF AIRCRAFT
N/A	3		DESCRIPTION OF SAFE ENTRY/EXIT FROM AIRCRAFT MAY PREVENT PASSENGER INJURY
N/A	3		IDENTIFICATION OF PASSENGER CONSTRAINTS MAY PREVENT INADEQUATE AIRCRAFT DAMAGE OR LOSS BY PASSENGER ACTION/BEHAVIOR

# TASK ANALYSIS

MISSION PHASE			PREFLIGHT		PAGE 1 OF 2	
FUNCTION			BEFORE EXTERIOR CHECK			
VERB	TASK		OPERATOR ACTION			
	OBJECT	MODIFIER				
1. CHECK	STORES	EXTERNAL	CHECK GROUND SAFETY PINS BULLET CATCHER			
2. CHECK	SWITCH	BATTERY	CHECK BATTERY SWITCH IS IN "OFF" POSITION			
3. CHECK	SWITCH	INVERTER	CHECK INVERTER SWITCH(S) IN "OFF" POSITION			
4. CHECK	SELECTOR SWITCH	NON-ESSENTIAL BUS	CHECK SELECTOR SWITCH IS IN "NORMAL" POSITION			
5. CHECK	CIRCUIT BREAKER	AIRCRAFT WEAPONS SIGHT	CHECK CIRCUIT BREAKER IS IN "OFF" POSITION			
6. CHECK	SWITCH	WING STORES INBOARD-OUTBOARD	CHECK SWITCH IS IN "OFF" POSITION			
7. CHECK	SWITCH	MASTER ARM	CHECK SWITCH IS IN "OFF" POSITION			
8. CHECK	FORMS AND PUBLICATIONS		VISUALLY CHECK LOG BOOK			

SEGMENT			PREFLIGHT		SUBSYSTEM		AIRCRAFT	
NAME	CONTROL		EQUIPMENT RESP		FEEDBACK		STIMULUS	
	OPTIONS						INPUT	
SAFETY PINS BULLET CATCHER	N/A		N/A				CHECKLIST	
SWITCH	ON-OFF		ON-BATTERY POWER TO EQUIPMENT OFF-REMOVE BATTERY POWER TO EQUIPMENT				SWITCH POSITION	
SWITCH	SPARE - ON OFF MAIN - ON		SELECTS MAIN OR SPARE POWER TO INVERTERS				SWITCH POSITION	
SWITCH	MANUAL - ON NORMAL - ON		SELECTS AUTOMATIC OR MANUAL POWER CONTROL TO BUS				SWITCH POSITION	
CIRCUIT BREAKER	IN-OUT		COMPLETES POWER CIRCUIT OPENS POWER CIRCUIT				CONTROL POSITION	
SWITCH	INBOARD OFF OUTBOARD		SELECTS STORES POSITION				SWITCH POSITION	
SWITCH	OFF SAFE ARM						SWITCH POSITION	
LOG BOOK							CHECKLIST	

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
SAFETY PINS BULLET CATCHER ON-OFF	3		CRITICAL TO SAFETY OF PERSONNEL/ EQUIPMENT DURING CHECKOUT
SWITCH POSITION ON-OFF	3		MUST BE IN CORRECT POSITION TO PRECLUDE INADVERTENT ENERGIZING OF EQUIPMENT TO AN UNSAFE CONDITION
SWITCH POSITION ON-OFF	3		MUST BE IN CORRECT POSITION TO PRECLUDE INADVERTENT ENERGIZING OF EQUIPMENT TO AN UNSAFE CONDITION
SWITCH POSITION "MANUAL" OR "NORMAL"	3		MUST BE IN CORRECT POSITION TO PRECLUDE INADVERTENT ENERGIZING OF EQUIPMENT TO AN UNSAFE CONDITION
CONTROL POSITION IN OR OUT	3		MUST BE IN CORRECT POSITION TO PRECLUDE INADVERTENT ENERGIZING OF EQUIPMENT TO AN UNSAFE CONDITION
SWITCH POSITION INBOARD-OUTBOARD-OFF	3		MUST BE IN CORRECT POSITION TO PRECLUDE INADVERTENT ENERGIZING OF EQUIPMENT TO AN UNSAFE CONDITION
SWITCH POSITION	3		MUST BE IN CORRECT POSITION TO PRECLUDE INADVERTENT ENERGIZING OF EQUIPMENT TO AN UNSAFE CONDITION
N/A	3		

Continued on next page

# TASK ANALYSIS

MISSION PHASE PRELIGHT				PAGE 2 OF 2			
FUNCTION BEFORE EXTERIOR CHECK							
TASK							
VERB	OBJECT	MODIFIER	OPERATOR ACTION				
9. POSITION	SWITCH	BATTERY	POSITION BATTERY SWITCH TO "ON"				
10. POSITION	SWITCH	INVERTER	POSITION INVERTER SWITCH TO "STANDBY"				
11. READ	GUAGE	FUEL	READ FUEL QUANTITY ON GUAGE				
12. POSITION	SWITCH	BATTERY	OFF				
13. POSITION	SWITCH	INVERTER	OFF				

SEGMENT		PRELIGHT							
SUBSYSTEM		AIRCRAFT							
CONTROL		EQUIPMENT RESP		FEEDBACK		STIMULUS			
NAME	OPTIONS			OK	NOT OK	V	A	OTHER	INPUT
SWITCH	OFF/ON	POWER TO SYSTEMS	D /					TACTILE	CHECKLIST
SWITCH	OFF/MAN/ STANDBY	POWER TO INVERTER	D /					TACTILE	CHECKLIST
GAUGE	0-1800 LBS	INDICATES FUEL QUANTITY	D /						CHECKLIST
SWITCH	OFF/ON	POWER TO SYSTEMS	D /					TACTILE	CHECKLIST
SWITCH	OFF/MAN/ STANDBY	POWER TO INVERTER	D /					TACTILE	CHECKLIST

OPERATOR DECISION OPTIONS	CRIT. RESP.	ACCURACY REQUIRED	COMMENTS

# TASK ANALYSIS

MISSION PHASE			PREFLIGHT		SEGMENT: AIRCRAFT PREFLIGHT		SUBSYSTEM		SUBSYSTEM		SUBSYSTEM	
FUNCTION: EXTERIOR CHECK RIGHT SIDE AM-16			TASK		OPERATION ACTION		CONTROL		EQUIPMENT RESP		FEEDBACK	
VERB	OBJECT	MODIFIER					NAME	OPTIONS			ON	OFF
1. CHECK	CANOPY AND WATCH	AIRCRAFT			VISUALLY INSPECT FOR CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
2. CHECK	ANTENNAS	AIRCRAFT			VISUALLY INSPECT FOR CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
3. CHECK	ROTORBLADE	FORWARD MAIN			VISUALLY INSPECT FOR CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
4. CHECK	PORT	STATIC			VISUALLY INSPECT FOR CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
5. CHECK	DAY	AMMUNITION			HYDRAULIC LINES, ELECT CANNON PLUGS		N/A	N/A	N/A	N/A	D / ✓	TACTILE
6. CHECK	QUANTITY	FUEL					N/A	N/A	N/A	N/A	D / ✓	TACTILE
7. CHECK	COMPARTMENT	HYDRAULIC			HYDRAULIC HOSES, HYDRAULIC LINES, ELEC. FUEL PRESS SENSORS		N/A	N/A	N/A	N/A	D / ✓	TACTILE
8. CHECK	GEAR	LANDING			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
9. CHECK	WING	AIRCRAFT			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
10. CHECK	STORES	WING			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
11. CHECK	SUMP	FUEL			DRAIN FUEL		SUMP DRAIN	OPEN CLOSED		HOLDS FUEL RELEASES FUEL	D / ✓	TACTILE
12. CHECK	TRANSMISSION	LOWER AREA			HYDRAULIC OIL, FUEL, ELECT. LINES, ACCESSORIES, CONTROLS, SAFETIES		N/A	N/A	N/A	N/A	D / ✓	TACTILE
13. CHECK	SCREEN	ENGINE			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
14. CHECK	TRANSMISSION	RIGHT			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
15. CHECK	ACCESS	PIECON			ANTENNAS, ENGINE OIL		N/A	N/A	N/A	N/A	D / ✓	TACTILE
16. CHECK	SMASH PLATE	AIRCRAFT			CHECK CONTROL TUBES AND SAFETIES, ROTOR HEAD		N/A	N/A	N/A	N/A	D / ✓	TACTILE
17. CHECK	CHAMBER	PLENUM			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
18. CHECK	ENGINE	RIGHT			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
19. CHECK	FUSELAGE	RIGHT SIDE			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
20. CHECK	TAIL PIPE	ENGINE			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
21. CHECK	COMPARTMENT	BATTERY			TAIL ROTOR SERVO, ATTACH BOLTS, BATTERY, C/B, REVVIS		N/A	N/A	N/A	N/A	D / ✓	TACTILE
22. CHECK	ELEVATOR	SYNCHRONIZED			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
23. CHECK	GEAR BOX	42 DEGREE			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
24. CHECK	FIN	VERTICAL			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
25. CHECK	GEAR BOX	90 DEGREE			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE

MISSION PHASE			PREFLIGHT		SEGMENT: AIRCRAFT PREFLIGHT		SUBSYSTEM		SUBSYSTEM		SUBSYSTEM	
FUNCTION: EXTERIOR CHECK RIGHT SIDE AM-16			TASK		OPERATION ACTION		CONTROL		EQUIPMENT RESP		FEEDBACK	
VERB	OBJECT	MODIFIER					NAME	OPTIONS			ON	OFF
1. CHECK	CANOPY AND WATCH	AIRCRAFT			VISUALLY INSPECT FOR CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
2. CHECK	ANTENNAS	AIRCRAFT			VISUALLY INSPECT FOR CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
3. CHECK	ROTORBLADE	FORWARD MAIN			VISUALLY INSPECT FOR CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
4. CHECK	PORT	STATIC			VISUALLY INSPECT FOR CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
5. CHECK	DAY	AMMUNITION			HYDRAULIC LINES, ELECT CANNON PLUGS		N/A	N/A	N/A	N/A	D / ✓	TACTILE
6. CHECK	QUANTITY	FUEL					N/A	N/A	N/A	N/A	D / ✓	TACTILE
7. CHECK	COMPARTMENT	HYDRAULIC			HYDRAULIC HOSES, HYDRAULIC LINES, ELEC. FUEL PRESS SENSORS		N/A	N/A	N/A	N/A	D / ✓	TACTILE
8. CHECK	GEAR	LANDING			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
9. CHECK	WING	AIRCRAFT			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
10. CHECK	STORES	WING			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
11. CHECK	SUMP	FUEL			DRAIN FUEL		SUMP DRAIN	OPEN CLOSED		HOLDS FUEL RELEASES FUEL	D / ✓	TACTILE
12. CHECK	TRANSMISSION	LOWER AREA			HYDRAULIC OIL, FUEL, ELECT. LINES, ACCESSORIES, CONTROLS, SAFETIES		N/A	N/A	N/A	N/A	D / ✓	TACTILE
13. CHECK	SCREEN	ENGINE			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
14. CHECK	TRANSMISSION	RIGHT			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
15. CHECK	ACCESS	PIECON			ANTENNAS, ENGINE OIL		N/A	N/A	N/A	N/A	D / ✓	TACTILE
16. CHECK	SMASH PLATE	AIRCRAFT			CHECK CONTROL TUBES AND SAFETIES, ROTOR HEAD		N/A	N/A	N/A	N/A	D / ✓	TACTILE
17. CHECK	CHAMBER	PLENUM			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
18. CHECK	ENGINE	RIGHT			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
19. CHECK	FUSELAGE	RIGHT SIDE			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
20. CHECK	TAIL PIPE	ENGINE			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
21. CHECK	COMPARTMENT	BATTERY			TAIL ROTOR SERVO, ATTACH BOLTS, BATTERY, C/B, REVVIS		N/A	N/A	N/A	N/A	D / ✓	TACTILE
22. CHECK	ELEVATOR	SYNCHRONIZED			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
23. CHECK	GEAR BOX	42 DEGREE			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
24. CHECK	FIN	VERTICAL			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE
25. CHECK	GEAR BOX	90 DEGREE			VISUAL INSPECTION CONDITION		N/A	N/A	N/A	N/A	D / ✓	TACTILE



## TASK ANALYSIS

MISSION PHASE			PREFLIGHT		SEGMENT		AIRCRAFT PREFLIGHT	
FUNCTION			EXTENSION CHECK LEFT SIDE A-10		SUBSYSTEM		AIRCRAFT PREFLIGHT	
VERB	TASK		OPERATOR ACTION		CONTROL		EQUIPMENT RESP.	STATUS/ INPUT
	OBJECT	MODIFIER	NAME	OPTIONS	FEEDBACK	OTHER		
1. CHECK	ROTOR	TAIL	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
2. CHECK	BLADE	AFT MAIN	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
3. CHECK	DRIVE SHAFT	TAIL ROTOR	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
4. CHECK	ELEVATOR	SYN. LEFT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
5. CHECK	TAIL BOOM	AIRCRAFT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
6. CHECK	COOLER	OIL	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
7. CHECK	SCREEN	ENGINE	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
8. CHECK	FILTER	FUEL	N/A	OPEN CLOSED	D ✓	TACTILE	N/A	CHECKLIST
9. CHECK	ENGINE	LEFT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
10. CHECK	CHAMBER	PLENUM	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
11. CHECK	TRANSMISSION	LEFT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
12. CHECK	PISTON	LEFT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
13. CHECK	BEACON	AIRCRAFT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
14. CHECK	WING	AIRCRAFT LEFT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
15. CHECK	STORES	WING	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
16. CHECK	GEAR	LANDING	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
17. CHECK	COMPARTMENT	HYDRAULIC	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
18. CHECK	FUSELAGE	AIRCRAFT LEFT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
19. CHECK	PORT	STATIC	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
20. CHECK	CANOPY	AIRCRAFT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
21. CHECK	BAY	AMMUNITION LEFT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
22. CHECK	LIGHT	LANDING	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
23. CHECK	TURRET	AIRCRAFT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
24. CHECK	NOSE	ADJUNCT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST
25. CHECK	TUBE	PITOT	N/A	N/A	D ✓	TACTILE	N/A	CHECKLIST

## EXTERNAL CHECKOUT

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# TASK ANALYSIS

MISSION PHASE PRELIGHT SEGMENT: AIRCRAFT PRELIGHT  
FUNCTION: PILOT INTERIOR CHECK (4-11) PAGE 1 OF 2

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. CHECK	CANOPY	OPEN	VISUALLY INSPECT AND ACTUATE CONTROL AS REQUIRED
2. SECURE	EQUIPMENT	LOOSE	-
3. ADJUST	PEDALS	AFT ROTOR	-
4. ADJUST	SEAT	AIRCRAFT	-
5. ADJUST	BELT	SAFETY	-
6. CHECK	CANOPY JETTISON	SECURE	-
7. CHECK	CYCLIC CONTROL	POSITION	-
8. CHECK	COLLECTIVE CONTROL	POSITION	-
9. ADJUST	THROTTLE	FRICTION OFF	-
10. CHECK	SWITCH, SEARCHLIGHT	OFF	-
11. CHECK	AIRCRAFT CIRCUIT BREAKER	IN	-
12. CHECK	BATTERY SWITCH	OFF	-
13. CHECK	GENERATOR SWITCH	OFF	-
14. CHECK	INVERTER SWITCH	OFF	-
15. CHECK	NON ESSENTIAL BUS	NORMAL	-
16. CHECK	ENGINE AIR SWITCH	SCREEN	-
17. CHECK	FORCE TRIM SWITCH	ON	-
18. CHECK	FUEL SWITCH	OFF	-
19. CHECK	ENGINE OIL BYPASS	AS DESIRED	-
20. CHECK	GOVERNOR SWITCH	AUTO	-
21. CHECK	TEMPERATURE	FREE AIR	-
22. CHECK	SCAN POWER	OFF	-
23. ADJUST	ICS	AS DESIRED	-
24. CHECK	INSTRUMENTS	INDICATIONS	-
25. SET	ALTITUDE	AS REQUIRED	-

SEGMENT: INTERIOR CHECK PILOT  
SUBSYSTEM

NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
HANDLE	OPEN-SECURE	OPENS LATCHES	D ✓	CHECKLIST
N/A	N/A	N/A	D ✓	CHECKLIST
PEDALS	IN-OUT	POSITIONS TO SELECTED LOCATION	D ✓	PEDAL POSITION
SEAT	UP/DOWN	POSITIONS TO SELECTED LOCATION	D ✓	SEAT POSITION
BELT	SNUG-LOOSE	POSITIONS AS ADJUSTED	D ✓	BELT POSITION
HANDLE	UN/SECURE	OPENS LATCHES	D ✓	CHECKLIST
CYCLIC	FORWARD, LEFT/RIGHT	MOVES IN DIRECTION OF FORCE	D ✓	CONTROL POSITION
COLLECTIVE	UP/DOWN	MOVES IN DIRECTION OF FORCE	D ✓	CONTROL POSITION
THROTTLE	TIGHT-LOOSE	INCREASE/DECREASE FRICTION	D ✓	CONTROL POSITION
SWITCH	ON-OFF	LIGHT ON/OFF	D ✓	SWITCH POSITION
CIRCUIT BREAKER	IN-OUT	CIRCUIT ON-OFF	D ✓	SWITCH POSITION
SWITCH	ON-OFF	POWER ON-OFF	D ✓	SWITCH POSITION
SWITCH	ON-OFF	POWER ON-OFF	D ✓	SWITCH POSITION
SWITCH	ON/OFF/STANDBY	POWER ON-OFF	D ✓	SWITCH POSITION
SWITCH	NORMAL/MANUAL	POWER ON-OFF	D ✓	SWITCH POSITION
SWITCH	SCREEN/BYPASS/DE-ICE	ACTIVATE, FORCE GRADIENT	D ✓	SWITCH POSITION
SWITCH	ON-OFF	ACTIVATE, FORCE GRADIENT	D ✓	SWITCH POSITION
SWITCH	ON-OFF	OPEN/CLOSE FUEL VALVE	D ✓	SWITCH POSITION
SWITCH	AUTO/OFF	WATER OIL FLOW THROUGH HEATER	D ✓	SELECT POSITION
SWITCH	AUTO-EMERGENCY		D ✓	SWITCH POSITION
INDICATOR	N/A	DISPLAY TEMPERATURE	D ✓	CHECKLIST
SWITCH	ON-OFF	ACTIVATE/DEACTIVATE CHANNELS	D ✓	SWITCH POSITION
INDICATORS	N/A	DISPLAY RADIOS	D ✓	CHECKLIST
ALTITUDE	0 TO 10000 FEET	DISPLAY SET ALTITUDE	D ✓	ALTITUDE DISPLAY

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
OPEN-LATCH	3		MUST LATCH TO PREVENT LOSS IN FLIGHT
N/A	3		MUST SECURE TO PREVENT LOSS IN FLIGHT
IN-OUT	3		MUST ADJUST TO GIVE FULL CONTROL IN FLIGHT
UP/DOWN	3		MUST ADJUST TO GIVE FULL CONTROL IN FLIGHT
SNUG-LOOSE	3		MUST ADJUST TO GIVE FULL CONTROL IN FLIGHT
UN/SECURE	3		MUST SECURE TO PREVENT LOSS IN FLIGHT
FORWARD, LEFT/RIGHT	3		MUST HAVE FREE MOVEMENT
UP/DOWN	3		MUST HAVE FREE MOVEMENT
TIGHT-LOOSE	3		
ON-OFF	3		OFF TO PREVENT POWER DRAIN
IN-OUT	3		
ON-OFF	3		OFF TO PREVENT INOVERT EQUIPMENT ACTUATION
ON-OFF	3		OFF TO PREVENT INOVERT EQUIPMENT ACTUATION
ON/OFF/STANDBY	3		OFF TO PREVENT INOVERT EQUIPMENT ACTUATION
NORMAL/MANUAL	3		NORMAL TO PREVENT INOVERT EQUIPMENT ACTUATION
SCREEN/BYPASS/DE-ICE	3		
ON-OFF	3		
ON-OFF	3		OFF TO PREVENT FIRE HAZARD
AUTO/OFF	3		UNIT SHUT AUTO
AUTO-EMERGENCY	3		
N/A	3		CORRECT INTERPRETATION NECESSARY FOR REQUIRED ENGINE PERFORMANCE
ON-OFF	3		OFF TO PREVENT EQUIPMENT ACTUATION
SELECT CHANNEL	3		SELECT CORRECT CHANNEL
N/A	3		CORRECT INTERPRETATION NECESSARY TO MISSION SUCCESS
	3		CORRECT SET NECESSARY TO MISSION SUCCESS

Continued on next page



# TASK ANALYSIS

MISSION PHASE				SEGMENT				INTERIOR CHECK PILOT			
FUNCTION				SUBSYSTEM				SUBSYSTEM			
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# TASK ANALYSIS

SEGMENT AIRCRAFT PREFLIGHT SUBSYSTEM

MISSION PHASE PREFLIGHT  
FUNCTION: COPILOT INTERIOR CHECK (AIRC-1) PAGE 1 OF 2

VERB	TASK	OBJECT	MODIFIER	OPERATOR ACTION	CONTROL	NAME	OPTIONS	EQUIPMENT RESP.	FEEDBACK	STIMULUS INPUT	O-ATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
1. CHECK	CANOPY WATCH	OPEN		VISUALLY CHECK, SET AND/OR ADJUST AS NECESSARY	OPEN/CLOSE	HANDLE	OPEN/CLOSE	OPEN/ALCURE WATCH	D / ✓	CHECKLIST	OPEN/CLOSE	3		CHECKLIST ITEMS ARE MADE TO ASSURE PROPERLY SET AND/OR ADJUSTED IN PREPARATION TO ACTIVATE AIRCRAFT SYSTEMS
2. CHECK	LOOSE EQUIPMENT	STOWED		"	N/A	N/A	N/A	N/A	D / ✓	CHECKLIST	N/A	3		
3. ADJUST	PEDALS	ART ROTOR		"	IN/OUT	PEDALS	IN/OUT	MOVE TO SELECT POSITION	D / ✓	POSITION, CHECKLIST	ADJUST "IN" OR "OUT"	2		
4. ADJUST	BELTS	SAFETY AND SHOULDER HARNESS		"	LOSE, SNUG	BELTS	LOSE, SNUG	MOVE TO SELECT POSITION	D / ✓	POSITION, CHECKLIST	ADJUST SNUG/LOOSE	3		
5. CHECK	SHOULDER HARNESS	LOCK/UNLOCK		"	OPEN/CLOSE	LOCK	OPEN/CLOSE	MOVE TO SELECT POSITION	D / ✓	POSITION, CHECKLIST	LOCK/UNLOCK	3		
6. CHECK	HANDLE	CANOPY JETTISON		"	OPEN/SECURE	HANDLE	OPEN/SECURE	SECURE/OPEN CANOPY	D / ✓	POSITION, CHECKLIST	ENABLE/SECURE	3		
7. CHECK	POWER	ELECTRIC		"	ON/OFF	SWITCH	ON/OFF	ENGAGE POWER	D / ✓	SWITCH POSITION	POWER ON/OFF	3		
8. CHECK	ENGINE AIR	SCREEN		"	AIR/SCREEN/DE-ICE	SWITCH	AIR/SCREEN/DE-ICE	SCREEN OPEN/CLOSED	D / ✓	SWITCH POSITION	BYPASS/SCREEN/DE-ICE	3		
9. CHECK	FORCE TRIM	ON		"	ON/OFF	SWITCH	ON/OFF	ACTIVATE FORCE TRIM	D / ✓	SWITCH POSITION	ON/OFF	3		
10. CHECK	INSTRUMENT LIGHTS	OFF		"	ON/OFF	SWITCH	ON/OFF	INSTRUMENT LIGHTS OFF	D / ✓	SWITCH POSITION	INSTRUMENT LIGHTS ON/OFF	3		
11. CHECK	GOVERNOR	AUTO		"	AUTO/EMERGENCY	SWITCH	AUTO/EMERGENCY	ENABLE/DISABLE GOVERNOR	D / ✓	SWITCH POSITION	AUTO/EMERGENCY	3		
12. CHECK	IDLE STOP RELEASE	OFF		"	ON/OFF	SWITCH	ON/OFF	ACTIVATE FORCE TRIM	D / ✓	SWITCH POSITION	ON/OFF	3		
13. ADJUST	VENTS	AS DESIRED		"	FILL OPEN/CLOSE	HANDLE	FILL OPEN/CLOSE	ADJUST AIR FLOW	D / ✓	SWITCH POSITION	AMOUNT OF AIR FLOW	3		
14. CHECK	COMPASS	STANDBY		"	INDICATOR	INDICATOR	INDICATOR	IND. HEADLINE	D / ✓	IND. DISPLAY	N/A	3		
15. CHECK	EMERGENCY COLLECTIVE HYDRAULIC	OFF		"	ON/OFF	SWITCH	ON/OFF	CHARGE HYDRAULIC ACCN.	D / ✓	SWITCH POSITION	ON/OFF HYDRAULIC POWER	3		
16. CHECK	EMERGENCY JETTISON	OFF, COVERED		"	ON/OFF	SWITCH	ON/OFF	ENABLE/SECURE JETTISON	D / ✓	SWITCH POSITION	ENABLE/SECURE	3		
17. CHECK	ICS	AS DESIRED		"	SELECT	SWITCH	SELECT	ENABLE SELECT CHANNELS	D / ✓	SWITCH POSITION	SELECT CHANNELS	3		
18. CHECK	VHF RADIO	OFF AND SET		"	ON/OFF - SELECT	SWITCH, DIAL	ON/OFF - SELECT	ENABLE SELECT FREQUENCY	D / ✓	SWITCH POSITION	SELECT FREQUENCIES	3		
19. CHECK	INSTRUMENTS	STATIC IND. MARKINGS		"	SCALE RANGE	INDICATORS	SCALE RANGE	N/A	D / ✓	IND. DISPLAY	N/A	3		
20. SET	ALTITUDE			"	SCALE RANGE	INDICATOR	SCALE RANGE	ALT. READOUT	D / ✓	IND. DISPLAY	N/A	3		
21. ADJUST	WINDMILL			"	ADJ. RANGE	WINDMILL	ADJ. RANGE	N/A	D / ✓	POSITION	RANGE OF VIEW	3		
22. STOW	SIGHT			"	STOW/UNSTOW	SIGHT	STOW/UNSTOW	N/A	D / ✓	POSITION	STOW/UNSTOW	3		
23. CHECK	GUNNAR LOCKS	SECURED		"	ENGAGE/DIS-ENGAGE	LOCK	ENGAGE/DIS-ENGAGE	ENABLE MOVEMENT	D / ✓	POSITION	LOCK/UNLOCK	3		
24. CHECK	OR SAFETY LEVER	SECURED		"	ENGAGE/OPEN	LEVER	ENGAGE/OPEN	ENABLE MOVEMENT	D / ✓	POSITION	ENGAGE/OPEN	3		

Continued on next page

# TASK ANALYSIS

MISSION PHASE PREFLIGHT  
FUNCTION COPILOT INTERIOR CHECK (PH-1)

PAGE 2 OF 2

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
25. CHECK	SUNSHIELD	SECURED	VISUALLY CHECK, SET AND/OR ADJUST AS NECESSARY
26. CHECK	WEAPONS SELECTOR SWITCH	AS DESIRED	"
27. ADJUST	KNOB (1200)	RANGE CONTROL	"
28. ADJUST	ELEMENT SELECTOR SWITCH	AS DESIRED	"
29. ADJUST	RETICLE INTEN. CON.	AS DESIRED	"
30. ADJUST	COMP. SWITCH	AS DESIRED	"
31. CHECK	PILOT O/R SWITCH	OFF	"
32. SELECT	WEAPON CLEAR/UNCLEAR	AS DESIRED	"
33. CHECK	WING STORE SELECTOR	OFF	"
34. SELECT	POINT/AREA SWITCH	AS DESIRED	"
35. SELECT	AMMUNITION FIRE OUT	AS DESIRED	"
36. CHECK	CYCLIC FIRE TRIGGER	OPEN COVERED	"
37. CHECK	KNIFE	BREKOUT	"
38. CHECK	JETTISON SYSTEM	CANDY	"
39. CHECK	LIGHT	COCKPIT	"
40. SET	COUNTER	AMMUNITION	"

SEGMENT AIRCRAFT PREFLIGHT  
SUBSYSTEM

NAME	OPTIONS	EQUIPMENT RESP	FEEDBACK		STIMULUS INPUT
			V	A	
SHIELD	UP/DOWN	N/A	D ✓		POSITION
SWITCH	SELECT	ENABLE SELECT WEAPON	D ✓	TACTILE	SWITCH POSITION
KNOB	RANGE SCALE	ENABLE SELECT RANGE	D ✓		SWITCH POSITION
SWITCH	#1, #2	SELECT FILAMENT	D ✓		SWITCH POSITION
DIAL	INTENSITY RANGE	VARIABLE BRIGHTNESS	D ✓		IND. DISPLAY
SWITCH	IN/OUT	RG COMPENSATION	D ✓		SWITCH POSITION
SWITCH	ON/OFF	ENABLE PILOT/COPILOT	D ✓	TACTILE	SWITCH POSITION
SWITCH	CLEAR/UNCLEAR	ENABLE SELECT FUNCTION	D ✓	TACTILE	SWITCH POSITION
SWITCH	OFF/IN/OUT	ENABLE SELECT WEAPON	D ✓	TACTILE	SWITCH POSITION
SWITCH	POINT/AREA	ENABLE SELECT FUNCTION	D ✓	TACTILE	SWITCH POSITION
SWITCH	ON/OFF	ENABLE SELECT FUNCTION	D ✓	TACTILE	SWITCH POSITION
TRIGGER	ON/OFF/COVER DOWN	ENABLE SELECT FUNCTION	D ✓	TACTILE	SWITCH POSITION
N/A	N/A	N/A	D ✓		CHECKLIST
SWITCH	EMERGE/SECURE	ENABLE SELECT FUNCTION	D ✓	TACTILE	SWITCH POSITION
SWITCH	ON/OFF	ENABLE SELECT FUNCTION	D ✓	TACTILE	SWITCH POSITION
DIAL	00 - 1000	DISPLAYS SETTING	D ✓		DIAL DISPLAY

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
UP/DOWN	3		CHECKLIST ITEMS ARE MADE TO ASSURE FLIGHT READINESS OF AIRCRAFT AND/OR IN PREPARATION TO ACTIVATE AIRCRAFT SYSTEM
SELECT WEAPON	3		
RANGE SCALE	3		
#1, #2	3		
SELECT INTENSITY LEVEL	3		
IN/OUT	3		
SELECT PILOT/COPILOT COUNTER	3		
CLEAR/UNCLEAR	3		
OFF/IN/OUT/BOARD	3		
POINT/AREA	3		
ON/OFF	3		
ENABLE/SECURE FIRING	3		
N/A	3		
ENABLE/SECURE	3		
LIGHT ON/OFF	3		
RANGE OF COUNTER	3		

# TASK ANALYSIS

SEGMENT SYSTEMS CHECKS  
SUBSYSTEM

MISSION PHASE PRELIGHT  
FUNCTION START ENGINE

PAGE 1 OF 2

VERB	TASK	OBJECT	MODIFIER	OPERATOR ACTION
1. POSITION	SWITCH	BATTERY		POSITION SWITCH ON
2. CHECK	VOLTMETER	READING		VERIFY BATTERY POWER 22VDC (MIN)
3. POSITION	SWITCH	RPM AUDIO		POSITION SWITCH TO "OFF"
4. POSITION	SWITCH	CHIP DETECTOR		SWITCH TO "TEST"
5. POSITION	SWITCH	GOVERNOR RPM		POSITION SWITCH TO "DECREASE" FOR 10 SECONDS
6. POSITION	THROTTLE			SET THROTTLE TO FLIGHT IDLE
7. POSITION	SWITCH	FUEL		POSITION SWITCH TO ON
8. CHECK	LIGHT	MASTER CAUTION		LIGHT TEST ON, OFF
9. CHECK	LIGHT	RPM WARNING		LIGHT TEST ON, OFF
10. CHECK	PANEL	CAUTION		CHECK FOR 10 LIGHTS, RESET
11. CHECK	ROTOR BLADES	CLEAR		VISUALLY CHECK FOR OBSTRUCTIONS
12. CHECK	READING	VOLTMETER		VISUALLY CHECK 22 VDC (MIN)
13. ENERGIZE	TRIGGER	START		DEPRESS START TRIGGER
14. MONITOR	TEMPERATURE	EGT		OBSERVE TEMPERATURE BUILDUP
15. MONITOR	RPM	NG		OBSERVE RPM BUILDUP
16. MONITOR	VOLTMETER	READING		15 VDC MIN
17. CHECK	CLOCK			OBSERVE
18. CHECK	BLADE	MAIN ROTOR		OBSERVE ROTATION
19. POSITION	CONTROL	COLLECTIVE		POSITION CONTROL FULL DOWN--20%
20. POSITION	CONTROL	CYCLIC		"CENTER" CYCLIC CONTROL--20%
21. DE-ENERGIZE	TRIGGER	STARTER		RELEASE STARTER AT 40% N
22. POSITION	SWITCH	GENERATOR		POSITION SWITCH TO ON
23. POSITION	SWITCH	INVERTER		POSITION SWITCH TO MAIN
24. CHECK	OIL PRESSURE	ENGINE AND TRANSMISSION		OBSERVE PRESSURE AND TEMPERATURE RISING

CONTROL		EQUIPMENT RESP.		FEEDBACK		STIMULUS INPUT
NAME	OPTIONS	SW	RES	V/A	OTHER	
SWITCH	OFF/ON	D	✓		TACTILE	CHECKLIST SWITCH POSITION
INDICATOR	15-24	D	✓			CHECKLIST INDICATOR READ POSITION
SWITCH	OFF/ON	D	✓			CHECKLIST SWITCH POSITION
SWITCH	NORMAL/TEST	D	✓			CHECKLIST SWITCH POSITION
SWITCH	INC/DEC/NO	D	✓			CHECKLIST SWITCH POSITION
THROTTLE	OPEN/CLOSED/IDLE	D	✓		TACTILE	CHECKLIST SWITCH POSITION
SWITCH	ON/OFF	D	✓			CHECKLIST SWITCH POSITION
INDICATOR	ON/OFF/TEST	D	✓			CHECKLIST SWITCH POSITION
INDICATOR	ON/OFF	D	✓			CHECKLIST SWITCH POSITION
INDICATOR	ON/OFF/TEST	D	✓			CHECKLIST SWITCH POSITION
N/A	N/A	D	✓			CHECKLIST
VOLTMETER	15-24	D	✓			CHECKLIST
TRIGGER	ON/OFF	D	✓		TACTILE	CHECKLIST SWITCH POSITION
INDICATOR	0° - 1000°	D	✓			CHECKLIST DISPLAY
INDICATOR	0% - 100%	D	✓			CHECKLIST DISPLAY
INDICATOR	15 - 30	D	✓			CHECKLIST DISPLAY
CLOCK		D	✓			
N/A	N/A	D	✓			CHECKLIST
COLLECTIVE	UP-DOWN	D	✓		TACTILE	CHECKLIST - CONT. POSITION
CYCLIC	FORWARD-LEFT/RIGHT	D	✓		TACTILE	CHECKLIST - CONT. POSITION
TRIGGER	ON/OFF	D	✓		TACTILE	CHECKLIST - CONT. POSITION
SWITCH	ON/OFF	D	✓			CHECKLIST - CONT. POSITION
SWITCH	MAIN/OFF/STANDBY	D	✓			CHECKLIST - CONT. POSITION
INDICATOR	25-100, 50-93	D	✓			CHECKLIST DISPLAY

OPERATOR DECISION OPTIONS	CRIT RESP	ACTUARY REQUIRED	COMMENTS
ON/OFF	1		
N/A	1	ABOVE 22 VOLTS	ERROR MAY RESULT IN SYSTEM MALFUNCTION
ON/OFF	1		NOISE WILL ALSO CAUSE REACTION
	1		
INCREASE/DECREASE OR RELEASE	1	± 0 SECONDS	
CLOSE TO FULL OPEN TO FLIGHT IDLE	1		ERROR MAY RESULT IN SYSTEM DAMAGE
ON/OFF	1		ERROR MAY RESULT IN SYSTEM DAMAGE
TEST ON/OFF	3/1		ERROR MAY RESULT IN SYSTEM DAMAGE
N/A	3		ERROR MAY RESULT IN SYSTEM DAMAGE
N/A	3/1		ERROR MAY RESULT IN SYSTEM DAMAGE
N/A	3		ERROR MAY RESULT IN DAMAGE TO BLADES AND/OR PERSONNEL INJURY
N/A			
ENGAGE/DISENGAGE	1		
	1		ERROR MAY RESULT IN ENGINE DAMAGE
	1		ERROR MAY RESULT IN ENGINE DAMAGE
	1		ERROR MAY RESULT IN ENGINE DAMAGE
N/A	3		ERROR MAY RESULT IN DAMAGE TO BLADES AND/OR PERSONNEL INJURY
UP-DOWN	1		ERROR MAY RESULT IN DAMAGE TO BLADES AND/OR PERSONNEL INJURY
FORWARD-LEFT/RIGHT	1		ERROR MAY RESULT IN DAMAGE TO BLADES AND/OR PERSONNEL INJURY
ENGAGE/DISENGAGE	1		ERROR MAY RESULT IN ENGINE DAMAGE
ON/OFF	1		ERROR MAY RESULT IN SYSTEM MALFUNCTION
MAIN/OFF/STANDBY	1		ERROR MAY RESULT IN SYSTEM MALFUNCTION
N/A	1		ERROR MAY RESULT IN ENGINE DAMAGE

Continued on next page



# TASK ANALYSIS

SYSTEMS CHECKS

MISSION PHASE: PREFLIGHT  
FUNCTION: START ENGINE

PAGE 2 OF 2

TASK	OPERATOR ACTION	
	MODIFIER	OBJECT
25. CHECK		OIL TEMPERATURE
26. CHECK	ALL	INSTRUMENTS
27. POSITION	ENGINE	THROTTLE
28. CHECK	NG	RPM
29. CHECK	NP	RPM
30. CHECK	ENGINE AND TEMPERATURE	OIL PRESSURE AND TEMPERATURE
31. CHECK	FUEL	PRESSURE
32. CHECK	MASTER CAUTION	PANEL
33. CHECK	MASTER CAUTION	LIGHT

NAME	CONTROL	EQUIPMENT RESP.	FEEDBACK		STIMULUS INPUT
			V	A	
INDICATOR	30-70, -100"	DISPLAY OIL TEMPERATURE	0	✓	CHECKLIST DISPLAY
INDICATOR(S)		DISPLAY	0	✓	CHECKLIST DISPLAY(S)
THROTTLE	FUEL OPEN/ CLOSE FLT IDLE	ENABLE ENGINE POWER	0		CHECKLIST CONT. POSITION
INDICATOR	0 - 6800	DISPLAY NG RPM	0	✓	CHECKLIST DISPLAY
INDICATOR	0 - 100%	DISPLAY NP RPM	0	✓	CHECKLIST DISPLAY
INDICATOR		DISPLAY OIL PRESSURE AND TEMPERATURE	0	✓	CHECKLIST DISPLAY
INDICATOR	5 - 30 PSI	DISPLAY FUEL PRESSURE	0	✓	CHECKLIST DISPLAY
INDICATOR	ON/OFF	DISPLAY CAUTION LIGHTS	0	✓	CHECKLIST DISPLAY
INDICATOR	ON/OFF	DISPLAY MASTER LIGHT	0	✓	CHECKLIST DISPLAY

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
N/A	3		
CLOSE TO FUEL OPEN	1		ERROR MAY RESULT IN ENGINE DAMAGE
N/A	1		ERROR MAY RESULT IN ENGINE DAMAGE
N/A	1		ERROR MAY RESULT IN ENGINE DAMAGE
N/A	1		ERROR MAY RESULT IN ENGINE DAMAGE
N/A	1		ERROR MAY RESULT IN ENGINE DAMAGE
N/A	3		ERROR MAY RESULT IN ENGINE DAMAGE
N/A	3		ERROR MAY RESULT IN ENGINE DAMAGE



# TASK ANALYSIS

SEGMENT SYSTEMS CHECKS  
SUBSYSTEM ENGINE

MISSION PHASE PRELIGHT  
FUNCTION PERFORM ENGINE RUN-UP

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION	CONTROL		EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT	OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
				NAME	OPTIONS		INDICATOR	V	A	OTHER				
1. POSITION	THROTTLE	ENGINE	ADVANCE THROTTLE FULL OPEN	THROTTLE INDICATOR(S)	FULL OPEN/ CLOSED 5000 ± 50 RPM	INTER-DIER ENGINE POWER DISPLAY READING(S)	D ✓			TACTILE CHECKLIST, NO. CONT POSITION CHECKLIST	FULL OPEN/CLOSE ACCEPTABLE RANGE	1		READ AND INTERPRET ACCURATELY TO DETECT OUT-OF-TOLERANCE CONDITIONS BEFORE ENGINE MALFUNCTION/DAMAGE
2. MONITOR	INSTRUMENTS	ENGINE	OBSERVE ENGINE OIL PRESSURE, TEMPERATURE, AND RPM	INDICATOR(S)	20 PSI	DISPLAY TORQUE READING	D ✓			CHECKLIST	ACCEPTABLE RANGE	1		
3. CHECK	INDICATOR	TORQUE	OBSERVE VALUE IN TOLERANCE	INDICATOR(S)	85% N	DISPLAY RPM READING	D ✓			CHECKLIST	ACCEPTABLE RANGE	1		
4. CHECK	INDICATOR	RPM	OBSERVE VALUE IN TOLERANCE	SWITCH LIGHT	INDICATOR NORMAL 6700 ± 50 ON/OFF	SET GOVERNOR RPM IND. RPM OVER SETTING	D ✓			CHECKLIST INDIC. DISPLAY CHECKLIST INDIC. DISPLAY	INCREASE/DECREASE ACCEPTABLE RANGE	1		ERROR MAY RESULT IN ENGINE MALFUNCTION ERROR MAY RESULT IN ENGINE MALFUNCTION
5. ADJUST	RPM	GOVERNOR	SET INCR. TO FULL THEN 6600	INDICATOR	85%	DISPLAY GAS PROD. RPM	D ✓			CHECKLIST INDIC. DISPLAY CHECKLIST INDIC. DISPLAY	ACCEPTABLE RANGE ACCEPTABLE RANGE	3 1		ERROR MAY RESULT IN ENGINE MALFUNCTION READ AND INTERPRET ACCURATELY TO DETECT OUT-OF-TOLERANCE CONDITIONS BEFORE ENGINE MALFUNCTION/DAMAGE
6. CHECK	INDICATOR	N	OBSERVE IN TOLERANCE	INDICATOR	0-6700 ± 50 -610°	DISPLAY POWER PROD. RPM DISPLAY ENGINE GAS TEMPERATURE	D ✓			CHECKLIST INDIC. DISPLAY CHECKLIST INDIC. DISPLAY	ACCEPTABLE RANGE ACCEPTABLE RANGE	1 1		
7. CHECK	RPM	AUDIO	OBSERVE IN TOLERANCE	INDICATOR	00-100 PSI	DISPLAY ENGINE OIL PRESSURE	D ✓			CHECKLIST INDIC. DISPLAY CHECKLIST INDIC. DISPLAY	ACCEPTABLE RANGE ACCEPTABLE RANGE	1 1		
8. CHECK	INDICATOR	ENGINE OIL PRESSURE	OBSERVE IN TOLERANCE	INDICATOR	-93°	DISPLAY ENGINE OIL TEMPERATURE	D ✓			CHECKLIST INDIC. DISPLAY CHECKLIST INDIC. DISPLAY	ACCEPTABLE RANGE ACCEPTABLE RANGE	1 1		
9. CHECK	INDICATOR	ENGINE OIL PRESSURE	OBSERVE IN TOLERANCE	INDICATOR	40-60 PSI	DISPLAY TRANSMISSION OIL PRESSURE	D ✓			CHECKLIST INDIC. DISPLAY CHECKLIST INDIC. DISPLAY	ACCEPTABLE RANGE ACCEPTABLE RANGE	1 1		
10. CHECK	INDICATOR	EGT	OBSERVE IN TOLERANCE	INDICATOR	-110°	DISPLAY TRANSMISSION OIL TEMPERATURE	D ✓			CHECKLIST INDIC. DISPLAY CHECKLIST INDIC. DISPLAY	ACCEPTABLE RANGE ACCEPTABLE RANGE	1 1		
11. CHECK	INDICATOR	TRANSMISSION OIL PRESSURE	OBSERVE IN TOLERANCE	INDICATOR	28 VDC	DISPLAY DC VOLTAGE VALUE	D ✓			CHECKLIST INDIC. DISPLAY CHECKLIST INDIC. DISPLAY	ACCEPTABLE RANGE ACCEPTABLE RANGE	1 1		
12. CHECK	INDICATOR	ENGINE OIL TEMPERATURE	OBSERVE IN TOLERANCE	INDICATOR	5-30	DISPLAY FUEL PRESSURE	D ✓			CHECKLIST INDIC. DISPLAY CHECKLIST INDIC. DISPLAY	ACCEPTABLE RANGE ACCEPTABLE RANGE	1 1		
13. CHECK	INDICATOR	TRANSMISSION OIL PRESSURE	OBSERVE IN TOLERANCE	INDICATOR										
14. CHECK	INDICATOR	TRANSMISSION OIL TEMPERATURE	OBSERVE IN TOLERANCE	INDICATOR										
15. CHECK	INDICATOR	VOLTMETER	OBSERVE IN TOLERANCE	INDICATOR										
16. CHECK	INDICATOR	FUEL PRESSURE	OBSERVE IN TOLERANCE	INDICATOR										

# TASK ANALYSIS

MISSION PHASE PRELIGHT  
FUNCTION ELECTRICAL SYSTEM CHECKS

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. CHECK	INDICATOR	VOLTMETER	OBSERVE INDICATOR IS IN TOLERANCE
2. POSITION	SWITCH	GENERATOR	ACTUATE SWITCH TO "OFF"
3. CHECK	INDICATOR	MASTER CAUTION	CHECK ON RESET INDICATOR
4. CHECK	PANEL	CAUTION	OBSERVE GENERATOR LIGHT ON
5. CHECK	PANEL	CAUTION	OBSERVE AFT FUEL BOOST LIGHT ON
6. POSITION	SWITCH	NON-ESSENTIAL BUS	SET SWITCH TO "MANUAL"
7. CHECK	INDICATORS	PRESSURE	OBSERVE POINTERS DEFLECTION
8. CHECK	PANEL	MASTER CAUTION	OBSERVE AFT FUEL BOOST LIGHT OFF
9. POSITION	SWITCH	GENERATOR	ACTUATE SWITCH TO "ON"
10. POSITION	SWITCH	NON-ESSENTIAL BUS	SET SWITCH TO "NORMAL"
11. POSITION	SWITCH	INVERTER	SET TO OFF
12. CHECK	INDICATOR	MASTER CAUTION	OBSERVE LIGHT "ON" AND RESET
13. CHECK	PANEL	CAUTION	OBSERVE LIGHTS "ON"
14. CHECK	INDICATORS	PRESSURE	OBSERVE POINTERS AT ZERO
15. POSITION	SWITCH	INVERTER	SET TO "STANDBY"
16. CHECK	PANEL	MASTER CAUTION	OBSERVE LIGHTS "OFF"
17. CHECK	INDICATORS	PRESSURE	OBSERVE READINGS
18. POSITION	SWITCH	INVERTER	SET TO "MAIN"
19. CHECK	INDICATORS	PRESSURE	OBSERVE NORMAL READINGS
20. CHECK	PANEL	MASTER CAUTION	OBSERVE LIGHTS "OFF"

SEGMENT SYSTEMS CHECKS  
SUBSYSTEM ELECTRICAL

NAME	CONTROL/DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK V I A OTHER	STIMULUS INPUT
INDICATOR	28 KDC	DISPLAYS VOLTAGE VALUE	0 ✓	CHECKLIST, INDICATOR POSITION
SWITCH	ON/OFF/RESET	SECURES ELECTRICAL POWER	0 ✓	CHECKLIST, CONT. POSITION
INDICATOR	ON/OFF	DISPLAYS CAUTION LIGHT	0 ✓	CHECKLIST, INDICATOR
INDICATORS	ON/OFF	DISPLAYS CAUTION LIGHTS	0 ✓	CHECKLIST, INDICATOR
INDICATORS	ON/OFF	DISPLAYS CAUTION LIGHT	0 ✓	CHECKLIST, INDICATOR
SWITCH	MANUAL/NORMAL	ENABLES MANUAL MODE	0 ✓	CHECKLIST, CONT. POSITION
INDICATORS	N/A	PRINTER DEFLECTION	0 ✓	CHECKLIST, CONT. POSITION
INDICATORS	ON/OFF	DISPLAYS CAUTION LIGHT(S) OFF	0 ✓	CHECKLIST, INDICATOR
SWITCH	ON/OFF/RESET	ELECTRICAL POWER	0 ✓	CHECKLIST, CONT. POSITION
SWITCH	MANUAL/NORMAL	ENABLES NORMAL MODE	0 ✓	CHECKLIST, CONT. POSITION
SWITCH	MAIN/OFF/STANDBY	SECURES INVERT POWER	0 ✓	CHECKLIST, CONT. POSITION
INDICATOR	ON/OFF	DISPLAYS MC LIGHTS	0 ✓	CHECKLIST, INDICATOR
INDICATORS	ON/OFF	DISPLAYS LIGHTS ON	0 ✓	CHECKLIST, INDICATOR
INDICATORS	PRESSURE RANGE ZERO	DISPLAYS POINTERS AT ZERO	0 ✓	CHECKLIST, INDICATOR
SWITCH	MAIN/OFF/STANDBY	ENABLES STANDBY INVERT	0 ✓	CHECKLIST, CONT. POSITION
INDICATORS	ON/OFF	DISPLAY MC LIGHTS OFF	0 ✓	CHECKLIST, INDICATOR
INDICATORS	PRESS RANGE	DISPLAY PRESS READING	0 ✓	CHECKLIST, INDICATOR
SWITCH	MAIN/OFF/STANDBY	ENABLES MAIN MODE	0 ✓	CHECKLIST, CONT. POSITION
INDICATORS	PRESS RANGE	DISPLAY PRESS READING	0 ✓	CHECKLIST, INDICATOR
INDICATORS	ON/OFF	DISPLAY LIGHTS OFF	0 ✓	CHECKLIST, INDICATOR

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
ACCEPTABLE RANGE	3	4 5	READ AND INTERPRET CORRECTLY TO DETECT OUT-OF-TOLERANCE CONDITIONS BEFORE ENGINE MALFUNCTION/DAMAGE
ON/OFF	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
LIGHT ON/OFF	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
LIGHTS ON/OFF	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
LITES ON/OFF	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
MANUAL/NORMAL	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
OLD PRINTER DEFLECTION OCCUR	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
LIGHTS ON/OFF	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
OFF/ON/RESET	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
MANUAL/NORMAL	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
MAIN/OFF/STANDBY	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
LIGHT ON/OFF	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
LIGHTS ON/OFF	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
"0" TO FULL RANGE	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
MAIN/OFF/STANDBY	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
LIGHTS ON/OFF	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
"0" TO FULL RANGE	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
MAIN/OFF/STANDBY	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
"0" TO FULL RANGE	1		ERROR MAY RESULT IN ENGINE MALFUNCTION
ON/OFF	1		ERROR MAY RESULT IN ENGINE MALFUNCTION

# TASK ANALYSIS

MISSION PHASE - PRELIGHT  
FUNCTION - CHECK NAVIGATION SYSTEM

VERB	OBJECT	MODIFIER	OPERATOR ACTION
1. SET	DESIGNATED FREQUENCY	VOR	TUNE THE DESIGNATED FREQUENCY
2. DETECT	TONE	IDENTIFICATION	LISTEN FOR IDENTIFICATION TONE
3. CHECK	FLAG	OFF	OBSERVE DISAPPEARANCE OF THE OFF FLAG
4. SET	ARROW	COURSE	SET "0" AND "180"
5. CHECK	ARROW	INDICATION	OBSERVE "TO" OR "FROM"
6. CHECK	NEEDLE	DEVIATION	OBSERVE NEEDLE CENTER WITHIN $\pm 2^\circ$
7. SET	VOLUME KNOB	ADF	TURN VOLUME TO DESIRED LEVEL
8. SELECT	FREQUENCY	BAND	SELECT BAND THAT CORRESPONDS TO SENDING BLAON FREQUENCY
9. ADJUST	CRANK	TUNING	TUNE TO SELECTED FREQUENCY
10. DETECT	COPE	IDENTIFICATION	ADJUST TO STRONGEST SIGNAL
11. ADJUST	CRANK	TUNING	ADJUST FOR MAXIMUM DEFLECTION ON TUNING METER
12. ADJUST	KNOB	VOLUME	SET FOR DESIRED LEVEL
13. CHECK	INDICATOR	ADF	DETERMINE DEGREES LEFT OR RIGHT BETWEEN BLAON AND A/C HEADING

NAME	CONTROL	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
KNOB	FREQUENCY RANGE	TUNES SELECTED FREQUENCY	D ✓	CHECKLIST, PRE-NAVIGATION, CONT. POSITION
EARPHONE	TONE RANGE	TRANSMITS TONE	D ✓	CHECKLIST, PRE-NAVIGATION, CONT. POSITION
INDICATOR	VISIBILITY/NOT VISIBLE	FLAG APPEARS/DISAPPEARS	D ✓	CHECKLIST, INDICATOR POSITION
INDICATOR	"0" OR "180"	ARROW MOVES TO SELECTED VALUE	D ✓	CHECKLIST, INDICATOR POSITION
INDICATOR	"TO" OR "FROM"	DISPLAYS DIRECTION	D ✓	CHECKLIST, INDICATOR POSITION
INDICATOR	INDICATOR RANGE	DISPLAYS NEEDLE POSITION	D ✓	CHECKLIST, INDICATOR POSITION
KNOB	LOAD/SOFT	TRANSMITS SELECTED VOLUME	D ✓	CHECKLIST, INDICATOR POSITION
DIAL	FREQUENCY RANGE	TUNES SELECTED FREQUENCY	D ✓	CHECKLIST, INDICATOR POSITION
CRANK	FREQUENCY RANGE	TUNES SELECTED FREQUENCY	D ✓	CHECKLIST, INDICATOR POSITION
TONE	AUDIO LEVEL	TRANSMITS TONE	D ✓	CHECKLIST, INDICATOR POSITION
INDICATOR	INSTR. RANGE	DISPLAYS INSTR. RANGE	D ✓	CHECKLIST, INDICATOR POSITION
KNOB	AUDIO RANGE	TRANSMITS TIME VOLUME	D ✓	CHECKLIST, INDICATOR POSITION
INDICATOR	SCALE RANGE	DISPLAYS NEEDLE DISPLACEMENT	D ✓	CHECKLIST, INDICATOR POSITION

OPERATOR DECISION/OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
FREQUENCY RANGE	1		MUST TUNE IN CORRECT FREQUENCY
N/A	1		MUST IDENTIFY CORRECT SIGNAL
VISIBILITY/NOT VISIBLE	1		DETECT AND IDENTIFY CORRECT FLAG POSITION
ZERO OR "180"	1		CORRECT SETTING VITAL TO NAVIGATION
"TO" OR "FROM"	1		CORRECT IDENTIFICATION VITAL TO NAVIGATION
TOLERANCE RANGE	1	$\pm 2$ DEGREES	CORRECT SETTING VITAL TO NAVIGATION
AUDIO LEVEL	1		MUST IDENTIFY CORRECT SIGNAL
FREQUENCY RANGE	1		CORRECT SETTING VITAL TO NAVIGATION
FREQUENCY RANGE	1		CORRECT SETTING VITAL TO NAVIGATION
AUDIO LEVEL	1		MUST IDENTIFY CORRECT SIGNAL
DEFLECTION RANGE	1		CORRECT SETTING VITAL TO NAVIGATION
AUDIO LEVEL	1		NONE
SCALE RANGE	1		CORRECT SETTING VITAL TO NAVIGATION

## TASK ANALYSIS

SUBSYSTEM: FUEL SYSTEM

MISSION PHASE: PRELIGHT  
FUNCTION: FUEL SYSTEM CHECK

TASK			OPERATOR ACTION		CONTROL			EQUIPMENT RESP			FEEDBACK			STIMULUS INPUT			OPERATOR DECISION OPTIONS			CRIT RESP			ACCURACY REQUIRED			COMMENTS		
VERB	OBJECT	MODIFIER			NAME	OPTIONS																						
1. CHECK	PRESSURE	FUEL	NOTES FUEL PRESSURE		INDICATOR	PRESS RANGE		DISPLAY FUEL PRESSURE	D ✓					CHECKLIST INDICATOR DISPLAY			SCALE RANGE	1										
2. DISENGAGE	CIRCUIT BREAKER	FWD FUEL BOOST PUMP	PULL CIRCUIT BREAKER OUT		SWITCH	ENGAGE/ DISENGAGE		ENABLE/SECURE ELECTRICAL POWER	D ✓				TACTILE	CHECKLIST POSITION			IN/OUT	1										
3. CHECK	PRESSURE	FUEL	OBSERVE FUEL PRESSURE ZERO		INDICATOR	PRESS RANGE		DISPLAY FUEL PRESSURE	D ✓					CHECKLIST INDICATOR DISPLAY			SCALE RANGE	1										
4. CHECK	LIGHT	MASTER CAUTION	OBSERVE LIGHT "ON", RESET		INDICATOR	ON/OFF		DISPLAY CAUTION LIGHT ON	D ✓					CHECKLIST INDICATOR DISPLAY			ON/OFF	1										
5. CHECK	LIGHT	MC PANEL	OBSERVE LIGHT "ON"		INDICATOR	ON/OFF		DISPLAY CAUTION LIGHT ON	D ✓					CHECKLIST INDICATOR DISPLAY			ON/OFF	1										
6. DISENGAGE	CIRCUIT BREAKER	AFT FUEL BOOST	PULL CIRCUIT BREAKER OUT		SWITCH	ENGAGE/ DISENGAGE		ENABLE/SECURE ELECTRICAL POWER	D ✓				TACTILE	CHECKLIST POSITION			IN/OUT	1										
7. CHECK	PRESSURE	FUEL	OBSERVE FUEL PRESSURE ZERO		INDICATOR	PRESS RANGE		DISPLAY FUEL PRESSURE	D ✓					CHECKLIST INDICATOR DISPLAY			SCALE RANGE	1										
8. CHECK	LIGHT	MASTER CAUTION	OBSERVE LIGHT "ON", RESET		INDICATOR	ON/OFF		DISPLAY MC LIGHT "ON"	D ✓					CHECKLIST INDICATOR DISPLAY			ON/OFF	1										
9. CHECK	LIGHT	MC PANEL	OBSERVE LIGHT "ON"		INDICATOR	ON/OFF		DISPLAY PANEL CAUTION LIGHT "ON"	D ✓					CHECKLIST INDICATOR DISPLAY			ON/OFF	1										
10. MONITOR	INSTRUMENTS		OPERATE SYSTEM AS IS FOR ONE MINUTE		INDICATOR	SCALE RANGE		DISPLAY PRESSURES	D ✓					CHECKLIST INDICATOR DISPLAY			SCALE RANGE	1										
11. ENGAGE	CIRCUIT BREAKER	FORWARD FUEL BOOST	PUSH C/B IN		SWITCH	ENGAGE/ DISENGAGE		ENABLE ELECTRICAL POWER	D ✓				TACTILE	CHECKLIST POSITION			IN/OUT	1										
12. CHECK	PRESSURE	FUEL	OBSERVE PRESSURE READING		INDICATOR	PRESS RANGE		DISPLAY FUEL PRESSURE	D ✓					CHECKLIST INDICATOR DISPLAY			SCALE RANGE	1										
13. CHECK	LIGHT	MC PANEL	OBSERVE LIGHT OUT		INDICATOR	ON/OFF		DISPLAY MC PANEL LIGHT OFF	D ✓					CHECKLIST INDICATOR DISPLAY			ON/OFF	1										
14. ENGAGE	CIRCUIT BREAKER	AFT FUEL BOOST	PUSH C/B IN		SWITCH	ENGAGE/ DISENGAGE		ENABLE ELECTRICAL POWER	D ✓				TACTILE	CHECKLIST POSITION			IN/OUT	1										
15. CHECK	PRESSURE	FUEL	OBSERVE PRESSURE READING		INDICATOR	PRESS RANGE		DISPLAY FUEL PRESSURE	D ✓					CHECKLIST INDICATOR DISPLAY			SCALE RANGE	1										
16. CHECK	LIGHT	MC PANEL	OBSERVE LIGHT OUT		INDICATOR	ON/OFF		DISPLAY MC PANEL LIGHT OFF	D ✓					CHECKLIST INDICATOR DISPLAY			ON/OFF	1										
17. ACTIVATE	TEST BUTTON	FUEL QUANTITY	OBSERVE		SWITCH	ON/OFF		DISPLAY FUEL QUANTITY	D ✓					CHECKLIST INDICATOR DISPLAY			SCALE RANGE	1										



# TASK ANALYSIS

SEGMENT: SYSTEM CHECK  
SUBSYSTEM: COMMUNICATIONS

MISSION PHASE: PREFLIGHT  
FUNCTION: CHECK COMMUNICATIONS SYSTEMS

TASK	OBJECT	MODIFIER	OPERATOR ACTION	CONTROL				EQUIPMENT RESP.				FEEDBACK				STIMULUS INPUT	OPERATOR DECISION OPTIONS	CRIT. RESP.	ACCURACY REQUIRED	COMMENTS
				NAME	OPTIONS															
1. SELECT	TRANSMITTER	RADIO	CHECK R/T POWER ON (VISUAL)	SWITCH	ON/OFF			ACTIVATE POWER SUPPLY	D / ✓							R/T	ON/OFF	1		MUST SELECT APPROPRIATE RADIO
2. ADJUST	FREQUENCY	RADIO	TUNE TO DESIRED FREQUENCY	DIAL	FREQUENCY R.G.			ENABLES FREQUENCY SELECTION	D / ✓							R/T	FREQUENCY R.G.	1		MUST TUNE CORRECT FREQUENCY
3. SELECT	CHANNEL	RADIO	SELECT SWITCH POSITION ON ICS	ICS	FM, INF, INT, ICS			OPENS CHANNEL SELECTED	D / ✓							ICS	FM, INF, INT, ICS	1		MUST SELECT APPROPRIATE RADIO
4. KEY	MICROPHONE	TRANSMITTER	DEPRESS AND HOLD SWITCH	SWITCH	OFF/INT/RADIO			OPENS CHANNEL SELECTED	D / ✓							MICROPHONE	OFF/INT/RADIO	1		
5. TRANSMIT	MESSAGE/REPORT		SEND RADIO MESSAGE	MICROPHONE				TRANSMITS	D / ✓								CONTENT OF MESSAGE	1		
6. RELEASE	MICROPHONE	TRANSMITTER	RELEASE MICROPHONE SWITCH	SWITCH	OFF/INT/RADIO			DISK/SAFE RADIO TRANS.	D / ✓							SWITCH	OFF/INT/RADIO	1		
7. SELECT	RECEIVER	RADIO	CHECK R/T POWER ON (VISUAL)																	
8. ADJUST	FREQUENCY	RADIO	TUNE TO DESIRED FREQUENCY																	
9. SELECT	CHANNEL	RADIO	SELECT SWITCH POSITION ON ICS																	
10. RECEIVE	MESSAGE	RADIO	LISTEN TO MESSAGE	HEADSET	ON/OFF			OPEN REC. CHANNEL	D / ✓								ON/OFF			



# TASK ANALYSIS

MISSION PHASE PRELIGHT  
FUNCTION CHECK FLIGHT CONTROLS

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. CHECK	SWITCH	FORCE TRIM	CHECKS THAT FORCE TRIM IS ON
2. CHECK	GRADIENTS	FORCE	CHECKS CYCLIC CONTROL, PEDALS FOR ACTION
3. CHECK	INTERMITT	CYCLIC	VERIFY CYCLIC INTERRUPT BUTTON OPERATION
4. CHECK	CONTROLS	FLIGHT	VERIFY FORCE GRADIENT RELEASED
5. ACTIVATE	SWITCH	FORCE TRIM	TRIME FORCE FROM SWITCH "OFF"
6. CHECK	CONTROL	CYCLIC	ACTIVATE CYCLIC TO CHECK ROTOR
7. CHECK	PEDALS	AFT ROTOR CONTROL	ACTIVATE PEDALS TO CHECK AFT ROTOR BLADE MOVEMENT
8. POSITION	CONTROL	CYCLIC	CENTER CYCLIC CONTROL
9. POSITION	PEDALS	AFT ROTOR CONTROL	CENTER PEDALS
10. POSITION	CONTROL	COLLECTIVE	ACTIVATE COLLECTIVE TO FULL DOWN

SEGMENT SYSTEMS CHECKS  
SUBSYSTEM FLIGHT CONTROLS

NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
FORCE TRIM SWITCH	ON/OFF	ENABLES FORCE TRIM SYSTEM	D ✓ TACTILE	CHECKLIST, CONTROL POSITION
CYCLIC, PEDALS	FULL CONTROL MOVEMENT	ENABLES CONTROLS IN "FORCE TRIM" MODE	D ✓ TACTILE	-
CYCLIC, BUTTON	ON/OFF	ENABLES FORCE TRIM SYSTEM	D ✓ TACTILE	-
FLIGHT CONTROLS	ON/OFF	PEDALS, CYCLIC	D ✓ TACTILE	-
FORCE TRIM SWITCH	ON/OFF	DISCHARGES FORCE TRIM SYSTEM	D ✓ TACTILE	-
CYCLIC	FOR/AFT, RIGHT/LEFT	TRIM MAIN ROTOR IN DIRECTION OF APPLIED FORCE	D ✓ TACTILE	-
PEDALS	IN/OFF, LEFT/RIGHT	-	D ✓ TACTILE	-
CYCLIC	FOR/AFT, LEFT/RIGHT	-	D ✓ TACTILE	-
PEDALS	IN/OFF, LEFT/RIGHT	-	D ✓ TACTILE	-
COLLECTIVE	UP/DOWN	-	D ✓ TACTILE	-

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
SWITCH POSITION ON-OFF	1		MUST IDENTIFY AND ACTIVATE CONTROL TO CORRECT POSITION TO ACCOMPLISH SYSTEM CHECK
FULL RANGE OF CONTROL MOVEMENTS	1		
DEPRESS, OFF	1		
ON/OFF			
SWITCH POSITION ON-OFF	1		
FULL RANGE OF CONTROL MOVEMENTS	1		
FULL RANGE OF CONTROL MOVEMENTS	1		
IS CYCLIC CENTERED	1		
ARE PEDALS CENTERED	1		
COLLECTIVE FULL DOWN	1		

# TASK ANALYSIS

SEGMENT SYSTEMS CHECKS

SUBSYSTEM HYDRAULIC

MISSION PHASE PREFLIGHT

FUNCTION CHECK HYDRAULIC SYSTEM

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION	CONTROL			ENLIGHTENMENT RESP	FEEDBACK			STIMULUS INPUT	OPERATOR DECISION/OPERATIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
				NAME	OPTIONS	ENVIRONMENT		ENVIRONMENT	ENVIRONMENT	ENVIRONMENT					
1. CHECK	SWITCH	FORCE TRIM	CHECK THAT SWITCH IS "OFF"	FORCE TRIM SWITCH	ON-OFF	ENABLES FORCE TRIM SYSTEM	D ✓	TACTILE	CHECKLIST	CHECKLIST	ON-OFF	SWITCH ON-OFF	1		MUST IDENTIFY AND ACTUATE CONTROL TO CORRECT POSITION TO ACCOMPLISH SYSTEM CHECK
2. POSITION	TEST SWITCH	ACTUATE SWITCH TO NO. 1 HOLD	ACTUATE SWITCH TO NO. 1 HOLD	SWITCH	1, 2, BOTH	DISABLE UNTESTED SYSTEM	D ✓	TACTILE	CHECKLIST	CHECKLIST	ON-OFF	SWITCH 1, 2, BOTH			
3. CHECK	LIGHT	MASTER CAUTION	VISUALLY CHECK FOR LIGHT	LIGHT	ON, OFF	DISPLAYS LIGHT	D ✓	TACTILE	CHECKLIST	CHECKLIST	ON, OFF	SWITCH 1, 2, BOTH			
4. CHECK	LIGHT	HYDRAULIC NO. 2	VISUALLY CHECK FOR LIGHT	LIGHT	ON, OFF	DISPLAYS LIGHT	D ✓	TACTILE	CHECKLIST	CHECKLIST	ON, OFF	SWITCH 1, 2, BOTH			
5. POSITION	SWITCH	MASTER CAUTION	RESET MASTER CAUTION	SWITCH	ON/OFF	EXTINGUISH LIGHT	D ✓	TACTILE	CHECKLIST	CHECKLIST	ON/OFF	RESET			
6. CHECK	CONTROL	CYCLIC	CHECK THAT CYCLIC IS FREE MOVING	CYCLIC	LEFT, RIGHT, FORE, AFT	CHARGES PITCH ATT.	D ✓	TACTILE	CHECKLIST	CHECKLIST	LEFT, RIGHT, FORE, AFT	LEFT, RIGHT, FORE, AFT			
7. CHECK	PEDALS	ATT ROTOR	CHECK THAT PEDALS ARE FREE	PEDALS	LEFT, RIGHT	TRIM ADJUSTMENT	D ✓	TACTILE	CHECKLIST	CHECKLIST	LEFT, RIGHT	LEFT, RIGHT			
8. CHECK	CONTROL	COLLECTIVE	CHECK THAT COLLECTIVE IS FREE	COLLECTIVE	UP, DOWN	TORQUE ADJUSTMENT	D ✓	TACTILE	CHECKLIST	CHECKLIST	UP, DOWN	UP, DOWN			
9. RELEASE	TEST SWITCH	TEST SWITCH TO BOTH	TEST SWITCH TO BOTH	SWITCH	1, 2, BOTH	DISABLE UNTESTED SYSTEM	D ✓	TACTILE	CHECKLIST	CHECKLIST	1, 2, BOTH	1, 2, BOTH			
10. POSITION	TEST SWITCH	ACTUATE SWITCH TO NO. 2 HOLD	ACTUATE SWITCH TO NO. 2 HOLD	SWITCH	1, 2, BOTH	DISABLE UNTESTED SYSTEM	D ✓	TACTILE	CHECKLIST	CHECKLIST	1, 2, BOTH	1, 2, BOTH			
11. CHECK	LIGHT	MASTER CAUTION	VISUALLY CHECK FOR LIGHT	LIGHT	ON, OFF	DISPLAYS LIGHT	D ✓	TACTILE	CHECKLIST	CHECKLIST	ON, OFF	ON, OFF	1		
12. CHECK	LIGHT	HYDRAULIC NO. 1	VISUALLY CHECK FOR LIGHT	LIGHT	ON, OFF	DISPLAYS LIGHT	D ✓	TACTILE	CHECKLIST	CHECKLIST	ON, OFF	ON, OFF			
13. POSITION	SWITCH	MASTER CAUTION	RESET MASTER CAUTION	SWITCH	ON/OFF	EXTINGUISH LIGHT	D ✓	TACTILE	CHECKLIST	CHECKLIST	ON/OFF	RESET	1		
14. CHECK	CONTROL	CYCLIC	CHECK THAT CYCLIC IS FREE	CYCLIC	LEFT, RIGHT, FORE, AFT	CHARGES PITCH ATT.	D ✓	TACTILE	CHECKLIST	CHECKLIST	LEFT, RIGHT, FORE, AFT	LEFT/RIGHT-FORE/AFT	1		
15. CHECK	PEDALS	ATT ROTOR	CHECK THAT PEDALS ARE STIFF BUT MOVABLE	PEDALS	LEFT, RIGHT	TRIM ADJUSTMENT	D ✓	TACTILE	CHECKLIST	CHECKLIST	LEFT, RIGHT	LEFT, RIGHT	1		
16. CHECK	CONTROL	COLLECTIVE	CHECK THAT COLLECTIVE IS FREE	COLLECTIVE	UP, DOWN	TORQUE ADJUSTMENT	D ✓	TACTILE	CHECKLIST	CHECKLIST	UP, DOWN	UP, DOWN	1		
17. RELEASE	TEST SWITCH	MASTER CAUTION	VISUAL CHECK OF LIGHT OFF	SWITCH	1, 2, BOTH	DISABLE UNTESTED SYSTEM	D ✓	TACTILE	CHECKLIST	CHECKLIST	1, 2, BOTH	1, 2, BOTH	1		
18. CHECK	LIGHT	MASTER CAUTION	VISUAL CHECK OF LIGHT OFF	LIGHT	ON, OFF	DISPLAYS LIGHT	D ✓	TACTILE	CHECKLIST	CHECKLIST	ON, OFF	ON, OFF	1		
19. CHECK	PANEL	CAUTION	VISUAL CHECK OF LIGHT OFF	LIGHT	ON, OFF	DISPLAYS LIGHT	D ✓	TACTILE	CHECKLIST	CHECKLIST	ON, OFF	ON, OFF	1		
20. POSITION	SWITCH	FORCE TRIM	ACTUATE SWITCH ON	SWITCH	ON, OFF	ACTIVATES FORCE TRIM	D ✓	TACTILE	CHECKLIST	CHECKLIST	ON, OFF	ON, OFF	1		

# TASK ANALYSIS

MISSION PHASE PRELIGHT  
FUNCTION CHECK LIGHTS (NIGHT MISSION)

VERB	TASK		OPERATOR ACTION	
	OBJECT	MODIFIER		
1. CHECK	LIGHTS	INSTRUMENT	ACTIVATE INSTRUMENT LIGHT CONTROL ON-OFF, DIM-BRIGHT	
2. CHECK	LIGHTS	CONSOLE	ACTIVATE CONSOLE LIGHT CONTROL ON-OFF, DIM-BRIGHT	
3. CHECK	LIGHTS	COCKPIT	ACTIVATE COCKPIT LIGHT CONTROL NORMAL/RED, ON-OFF	
4. CHECK	LIGHTS	EXTERIOR	ACTIVATE EXTERIOR LIGHT CONTROLS ON-OFF	
5. CHECK	LIGHTS	LANDING	ACTIVATE LANDING LIGHT CONTROL ON-OFF	
6. SET	LIGHT	LANDING	SET POSITION OF LANDING LIGHT	

SEGMENT SYSTEMS CHECKS  
SUBSYSTEM LIGHTS

NAME	CONTROL	OPTIONS	EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
				MAN	V	A	
SWITCH KNOB	ON/OFF DIM-BRIGHT	ENABLE LIGHT CIRCUIT AND LIGHT INTENSITY	D ✓				CHECKLIST, CONTROL POSITION
SWITCH KNOB	ON/OFF DIM-BRIGHT	ENABLE LIGHT CIRCUIT AND LIGHT INTENSITY	D ✓				CHECKLIST, CONTROL POSITION
SWITCH KNOB	ON/OFF DIM-BRIGHT	ENABLE LIGHT CIRCUIT AND LIGHT INTENSITY	D ✓				CHECKLIST, CONTROL POSITION
TOGGLE	ON/OFF	ENABLE LIGHT CIRCUIT	D ✓				CHECKLIST, CONTROL POSITION
TOGGLE	ON/OFF	ENABLE LIGHT CIRCUIT	D ✓				CHECKLIST, CONTROL POSITION
KNOB	UP, DOWN, LEFT, RIGHT	ADJUST POSITION OF LANDING LIGHTS	D ✓				CHECKLIST, CONTROL POSITION

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
ON-OFF AND INTENSITY LEVEL	3		INST IDENTIFY AND ACTUATE CONTROL TO CORRECT POSITION TO ACCOMPLISH SYSTEM CHECKS
ON-OFF AND INTENSITY LEVEL	3		
ON-OFF AND INTENSITY LEVEL	3		
SWITCH ON-OFF	3		
SWITCH ON-OFF	3		
LEFT, RIGHT, UP, DOWN	3		

# TASK ANALYSIS

MISSION PHASE - PRELIGHT  
FUNCTION - SCAS CHECK (A1-1)

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. POSITION	SWITCH	SCAS	TURN SCAS ON
2. CHECK	LIGHTS	NO-GO	OBSERVE NO-GO LIGHTS ON
3. CHECK	LIGHTS	NO-GO	OBSERVE NO-GO LIGHTS OFF
4. OBSERVE	TIPPATH PLANE	ROTOR	VISUALLY CHECK ROTOR FOR NO DEFLECTION/DEFLECTION
5. HOLD	CONTROL	CYCLIC	FEEL CYCLIC FEEDBACK
6. ENGAGE	SWITCH	PITCH CONTROL	TURN CONTROL ON
7. ENGAGE	SWITCH	ROLL CONTROL	TURN CONTROL ON
8. OBSERVE	TIPPATH PLANE	ROTOR	VISUALLY CHECK ROTOR FOR NO DEFLECTION/DEFLECTION
9. HOLD	CONTROL	CYCLIC	FEEL CYCLIC FEEDBACK
10. ENGAGE	SWITCH	YAW	TURN CONTROL ON
11. FEEL	PEDALS	AFT ROTOR	FEEL PEDAL FEEDBACK
12. GUNNER DISENGAGE	CONTROLS	SCAS	TURN PITCH, ROLL, YAW CONTROLS OFF
13. CHECK	LIGHTS	NO-GO	OBSERVE NO-GO LIGHTS ON
14. CHECK	LIGHTS	NO-GO	OBSERVE NO-GO LIGHTS OFF
15. RE-ENGAGE	CONTROLS	SCAS	TURN PITCH, ROLL, YAW CONTROLS ON
16. CHECK	LIGHTS	NO-GO	OBSERVE NO-GO LIGHTS OFF
17. PILOT DISENGAGE	CONTROL	SCAS	PITCH, ROLL, YAW
18. RE-ENGAGE	CONTROLS	SCAS	PITCH, ROLL, YAW

SEGMENT - SYSTEMS CHECKS  
SUBSYSTEM - SCAS

NAME	CONTROL OPTIONS	EQUIPMENT RESP.	FEEDBACK				STIMULUS INPUT
			SM	VS	V	A	
SWITCH	ON/OFF	ENABLE POWER TO SCAS	D	✓			CHECKLIST CONTROL POSITION
INDICATOR	ON/OFF	DISPLAY SCAS CONDITION	D	✓			CHECKLIST INDICATOR DISPLAY
INDICATOR	ON/OFF	DISPLAY SCAS CONDITION	D	✓			-
TPP	DEFLECTION/NO DEFLECTION		D	✓			TPP
CYCLIC	DEFLECTION/NO DEFLECTION		D	✓			TACTILE CONTROL POSITION
SWITCH	ENGAGE/DISENGAGE	ENABLE POWER TO PITCH CONTROL	D	✓			CHECKLIST CONTROL POSITION
SWITCH	ENGAGE/DISENGAGE	ENABLE POWER TO ROLL CONTROL	D	✓			TACTILE
TPP	DEFLECTION/NO DEFLECTION		D	✓			TPP
CYCLIC	DEFLECTION/NO DEFLECTION		D	✓			TACTILE CONTROL POSITION
SWITCH	ENGAGE/DISENGAGE	ENABLE POWER TO YAW CONTROL	D	✓			CHECKLIST CONTROL POSITION
PEDALS	DEFLECTION/NO DEFLECTION		D	✓			PEDALS
SWITCH	ENGAGE/DISENGAGE	SECURE POWER TO ATTITUDE CONTROLS	D	✓			CHECKLIST CONTROL POSITION
INDICATOR	ON/OFF	DISPLAY SCAS CONDITION	D	✓			-
INDICATOR	ON/OFF	DISPLAY SCAS CONDITION	D	✓			-
SWITCH	ENGAGE/DISENGAGE	ENABLE POWER TO ATTITUDE CONTROL	D	✓			TACTILE
INDICATOR	ON/OFF	DISPLAY SCAS CONDITION	D	✓			CHECKLIST INDICATOR DISPLAY

OPERATOR ACTION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
OFF/ON	1		CORRECT SWITCH POSITION NECESSARY TO SYSTEM OPERATION
DISPLAY ON/OFF	1		DETECTION AND CORRECT IDENTIFICATION REQUIRED FOR SATISFACTORY SYSTEM OPERATION
DISPLAY ON/OFF	1		-
N/A			
ENGAGE/DISENGAGE ONE OF 3 CONTROLS	1		CORRECT SWITCH POSITION NECESSARY TO SYSTEM OPERATION
ENGAGE/DISENGAGE ONE OF 3 CONTROLS	1		-
N/A			
ENGAGE/DISENGAGE ONE OF 3 CONTROLS	1		CORRECT SWITCH POSITION NECESSARY TO SYSTEM OPERATION
ENGAGE/DISENGAGE 3 CONTROLS	1		-
DISPLAY ON/OFF	1		DETECTION AND CORRECT IDENTIFICATION REQUIRED FOR SATISFACTORY SYSTEM OPERATION
DISPLAY ON/OFF	1		-
ENGAGE/DISENGAGE 3 CONTROLS	1		CORRECT SWITCH POSITION NECESSARY TO SYSTEM OPERATION
DISPLAY ON/OFF	1		DETECTION AND CORRECT IDENTIFICATION REQUIRED FOR SATISFACTORY SYSTEM OPERATION



# TASK ANALYSIS

MISSION PHASE PRELIGHT  
FUNCTION CHECK DE-ICE SYSTEM

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. POSITION	SWITCH	ENGINE AIR	TURN SWITCH TO "BYPASS"
2. CHECK	SCREENS		VISUALLY CHECK POSITION OF ENGINE AIR SCREENS
3. POSITION	SWITCH	ENGINE AIR	TURN SWITCH TO DE-ICE
4. CHECK	EGT		VISUAL CHECK OF GAGE FOR RISE IN EGT
5. POSITION	SWITCH	ENGINE AIR	TURN SWITCH TO "SCREEN"
6. CHECK	SCREENS		VISUAL CHECK OF SCREENS
7. CHECK	EGT		VISUAL CHECK OF EGT GAGE FOR DECREASE

SEGMENT SYSTEM CHECKS  
SUBSYSTEM DE-ICE

NAME	CONTROL		EQUIPMENT RESP	FEEDBACK		STIMULUS INPUT
	OPTIONS	NAME		VIA	OTHER	
SWITCH	BYPASS DE-ICE SCREEN		OPENS AIR SCREENS	0 ✓	TACTILE	CHECKLIST CONTROL POSITION
SCREENS	OPEN, CLOSED		OPENS AIR SCREENS	0 ✓		SWITCH POSITION CHECKLIST
SWITCH	BYPASS DE-ICE SCREEN		OPENS BLEED AIR LINES	0 ✓	TACTILE	SWITCH POSITION CHECKLIST
EGT GAGE	SCALE RANGE		DISPLAYS EGT	0 ✓		DISPLAY
SWITCH	BYPASS DE-ICE SCREEN		OPENS SCREENS, BLEED AIR LINES	0 ✓	TACTILE	SWITCH POSITION
SCREENS	OPEN, CLOSED			0 ✓		SCREENS
GAGE	SCALE RANGE		DISPLAYS EGT	0 ✓		DISPLAY

OPERATOR DECISION OPTIONS	CRIT. RESP	ACCURACY REQUIRED	COMMENTS
BYPASS DE-ICE SCREEN	3		NOT IDENTIFY AND ADJUST CONTROL TO CORRECT POSITION TO ACCOMPLISH SYSTEM CHECKS
OPEN, CLOSED	3		
BYPASS DE-ICE SCREEN	3		
SCALE RANGE	3		
BYPASS DE-ICE SCREEN	3		
OPEN, CLOSED	3		
SCALE RANGE	3		



# TASK ANALYSIS

MISSION PHASE: PRELIGHT  
FUNCTION: CHECK ECU (AM-1)

SEGMENT: SYSTEM CHECKS  
SUBSYSTEM: ECU

VERB	TASK		OPERATOR ACTION	
	OBJECT	MODIFIER		
1. SELECT	SWITCH	ECU	TURN ECU ON	
2. SET	SWITCH	TEMPERATURE CONTROL	SET TEMPERATURE CONTROL TO "COLD"	
3. CHECK	TEMPERATURE	EGT	VERIFY EGT RISE	
4. CHECK	AIR	COOLING	CHECK FOR COOLING AIR FROM VENTS	
5. SET	SWITCH	TEMPERATURE CONTROL	SET TEMPERATURE CONTROL TO "HOT"	
6. CHECK	AIR	HEATING	CHECK FOR HOT AIR	
7. SELECT	SWITCH	ECU	TURN ECU OFF	

NAME	CONTROL	EQUIPMENT RESP.	FEEDBACK				STIMULUS INPUT
			D	V	A	OTHER	
SWITCH, TOGGLE	BATH REMOVAL OFF ECU	ENABLES ECU	D ✓			TACTILE	CHECKLIST, CONTROL POSITION
SWITCH, ROTARY	COLD TO HOT	ADJUSTS TO SELECTED TEMPERATURE	D ✓			TACTILE	
TEMPERATURE DISPLAY	SCALE RANGE	DISPLAYS SYSTEM TEMPERATURE	D ✓				CHECKLIST, INSTR. DISPLAY
VENT	OPEN, CLOSE	ALLOW AIR FLOW	D ✓			TACTILE	AIR
SWITCH, ROTARY	COLD TO HOT	ADJUSTS TO SELECTED TEMPERATURE	D ✓			TACTILE	CHECKLIST, CONTROL POSITION
VENT	OPEN, CLOSE	ALLOW AIR FLOW	D ✓				AIR
SWITCH, TOGGLE	ON/OFF	SECURES ECU	D ✓			TACTILE	CHECKLIST, CONTROL POSITION

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
ACTIVATE CONTROL ON OR OFF	3		MUST IDENTIFY AND ACTIVATE CONTROL TO CORRECT POSITION TO ACCOMPLISH SYSTEM CHECK
SELECT TEMPERATURE FROM COLD TO HOT	3		
TEMPERATURE IN REQUIRED RANGE	3		MUST IDENTIFY AND INTERPRET DISPLAY CORRECTLY TO ACCOMPLISH SYSTEM CHECK
TEMPERATURE IN REQUIRED RANGE	3		
SELECT TEMPERATURE FROM COLD TO HOT	3		MUST IDENTIFY AND ACTIVATE CONTROL TO CORRECT POSITION TO ACCOMPLISH SYSTEM CHECK
TEMPERATURE IN REQUIRED RANGE	3		
ACTIVATE CONTROL ON OR OFF	3		MUST IDENTIFY AND ACTIVATE CONTROL TO CORRECT POSITION TO ACCOMPLISH SYSTEM CHECK

# TASK ANALYSIS

MISSION PHASE - PRELIGHT				SUBSYSTEM - PITOT HEATER				SYSTEMS CHECKS			
FUNCTION - CHECK PITOT HEATER				SUBSYSTEM - PITOT HEATER				SYSTEMS CHECKS			
TASK		OPERATOR ACTION		CONTROL/DISPLAY		EQUIPMENT RESP.		FEEDBACK		STIMULUS INPUT	
VERB	OBJECT	MODIFIER		NAME	OPTIONS			V	A	OTHER	
1. SELECT	SWITCH	PITOT HEATER	TURN SWITCH "ON"	SWITCH, TOGGLE	ON-OFF	ENABLES PITOT HEATER	D /			TACTILE	CHECKLIST, CONTROL POSITION
2. CHECK	GAUGE	AMMETER	VISUAL CHECK FOR INCREASE LOAD ON PETER	INDICATOR	SCALE RANGE	DISPLAYS AMMETER VALUE	D /				CHECKLIST, DISPLAY INDICATOR
3. CHECK	COMPASS	STANDBY	OBSERVE SWING OF STANDBY COMPASS	INDICATOR	SCALE RANGE	DISPLAYS DIRECTION READING	D /				CHECKLIST, DISPLAY INDICATOR
4. SELECT	SWITCH	PITOT HEATER	TURN SWITCH OFF	SWITCH, TOGGLE	ON-OFF	SECURES PITOT HEATER	D /			TACTILE	CHECKLIST, CONTROL POSITION

# TASK ANALYSIS

MISSION PHASE PRELIGHT  
FUNCTION CHECK COCKPIT CONSOLES

SEGMENT SYSTEMS CHECKS  
SUBSYSTEM CONSOLE

VERB	TASK OBJECT	MODIFIER	OPERATION ACTION
1. CHECK	SWITCHES	COCKPIT	VERIFY THAT ALL COCKPIT SWITCHES ARE IN THE REQUIRED POSITION

NAME	CONTROL OPTIONS	EQUIPMENT RESP.	FEEDBACK			STIMULUS INPUT
			BY V	A	OTHER	
SWITCH, TOGGLE ON-OFF, SCALE RANGE AND ROTARY	ON-OFF, SCALE RANGE	ENABLES SYSTEMS SELECTED D / SECURES SYSTEMS SELECTED "OFF"	✓			CHECKLIST, CONTROL POSITION
AC CIRCUIT BREAKERS COLLECTIVE CONTROL HEAD ELECTRICAL POWER METER PANEL SCAS 1M RADIO TRANSMITTER TRANSMITTER PANEL ALUF TRANSDUCER TRANSDUCER PANEL DC CIRCUIT BREAKERS						

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
SWITCHES SET AS DESIRED	1		NOT LOCATE IDENTIFY AND INTERPRET POSITION CORRECTLY TO AC- COMPLY WITH SYSTEM CHECKS

## TASK ANALYSIS

[illegible]

# TASK ANALYSIS

MISSION PHASE PRELIGHT  
FUNCTION CHECK PASSENGERS

SEGMENT SYSTEMS CHECKS

SUBSYSTEM

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. CHECK	PASSENGERS		VISUALLY CHECK FOR CORRECT NUMBER OF PASSENGERS ON BOARD
2. CHECK	SECURITY	PASSENGERS	PILOT AND CREW CHIEF CHECK THAT PASSENGERS ARE SEATED AND USE SEAT BELTS

NAME	CONTROL	OPTIONS	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
				ON V A OTHER	

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
			PILOT MUST BE AWARE OF NUMBER OF PASSENGERS AND THEIR LOCATION IN AIRCRAFT TO AVOID CG PROBLEMS AND GROSS WEIGHT PROBLEMS



# TASK ANALYSIS

MISSION PHASE DEPARTURE			
FUNCTION DEPARTURE CLEARANCE COMMUNICATIONS			
VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. SELECT	RADIO		CALL ATC FACILITY FOR DEPARTURE INSTRUCTIONS
2. RECORD	INSTRUCTIONS	DEPARTURE	COPY ATC DEPARTURE INSTRUCTIONS

SEGMENT HOVER			
SUBSYSTEM COMMUNICATIONS			
NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK
SWITCH	SWH, WH, FM	ENABLES SELECTED RADIO	D ✓ TACTILE
FLIGHT LOG	N/A	N/A	D ✓ TACTILE

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
CHOICE OF SWH, WH OR FM RADIO	3		MUST SELECT APPROPRIATE RADIO
REPORT CONTENT	3		MUST ACCURATELY RECORD DEPARTURE INSTRUCTIONS

# TASK ANALYSIS

MISSION PHASE: DEPARTURE  
FUNCTION: COMPLETE PRE-FLIGHT CHECK

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. CHECK	RPM	N <sub>G</sub> , N <sub>H</sub>	CHECKS THAT ENGINE RPM IS IN TOLERANCE
2. CHECK	RPM	ROTOR	CHECKS THAT ROTOR RPM IS IN TOLERANCE
3. CHECK	LIGHT	MASTER CAUTION	VERIFY MASTER CAUTION LIGHT IS OFF
4. CHECK	PANEL	CAUTION LIGHT	VERIFY ALL CAUTION LIGHTS ARE OFF
5. CHECK	TEMPERATURES	ENGINE	VERIFY ENGINE TEMPERATURES ARE IN TOLERANCE
6. CHECK	PRESSURE	ENGINE	VERIFY ENGINE PRESSURES ARE IN TOLERANCE
7. CHECK	TEMPERATURE	TRANSMISSION	VERIFY TRANSMISSION TEMPERATURE IS IN TOLERANCE
8. CHECK	PRESSURE	TRANSMISSION	VERIFY TRANSMISSION PRESSURE IS IN TOLERANCE
9. CHECK	QUANTITY	FUEL	ASCERTAIN SUFFICIENT FUEL IS AVAILABLE
10. CHECK	PRESSURE	FUEL	VERIFY FUEL PRESSURE IS IN TOLERANCE
11. CHECK	SCARS		CHECK SAS IS "ON"
12. CHECK	FORCE TRIM		CHECK FORCE TRIM IS "OFF"
13. CHECK	PANEL	ARMAMENT	CHECK PANEL IS SECURE
14. CHECK	PANEL	ECU	CHECK SWITCH IS "OFF"
15. CHECK	TORQUE		VERIFY TORQUE VALUE IS IN TOLERANCE
16. CHECK	LIGHT	BEACON	CHECK BEACON LIGHT IN "ON"

SEGMENT: HOVER  
SUBSYSTEM: INSTRUMENTS AND CONSOLE

NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK		STIMULUS INPUT
			DIS	V/A/OTHER	
INDICATOR	SCALE RANGE	DISPLAY RPM VALUE	0 ✓		INDICATOR, CHECKLIST
INDICATOR	SCALE RANGE	DISPLAY RPM VALUE	0 ✓		INDICATOR, CHECKLIST
INDICATOR	ON-OFF	DISPAYS OUT-OF-TOLERANCE CONDITION	0 ✓		INDICATOR, CHECKLIST
INDICATOR	ON-OFF	DISPAYS OUT-OF-TOLERANCE CONDITION	0 ✓		INDICATOR, CHECKLIST
INDICATOR	SCALE RANGE	DISPLAY TEMPERATURE VALUES	0 ✓		INDICATOR, CHECKLIST
INDICATOR	SCALE RANGE	DISPLAY PRESSURE VALUES	0 ✓		INDICATOR, CHECKLIST
INDICATOR	SCALE RANGE	DISPLAY TEMPERATURE VALUES	0 ✓		INDICATOR, CHECKLIST
INDICATOR	SCALE RANGE	DISPLAY PRESSURE VALUES	0 ✓		INDICATOR, CHECKLIST
INDICATOR	SCALE RANGE	DISPLAY FUEL QUANTITY	0 ✓		INDICATOR, CHECKLIST
INDICATOR	SCALE RANGE	DISPLAY PRESSURE VALUE	0 ✓		INDICATOR, CHECKLIST
INDICATOR	ON-OFF	ENABLES SYSTEM	0 ✓		CONTROL POSITION, CHECKLIST
INDICATOR	ON-OFF		0 ✓	TACTILE	CONTROL POSITION, CHECKLIST
INDICATOR	ON-OFF	DISPAYS ARMAMENT STATUS	0 ✓	TACTILE	CONTROL POSITION, CHECKLIST
INDICATOR	ON-OFF	DISPAYS ENVIRONMENT SYSTEM STATUS	0 ✓	TACTILE	CONTROL POSITION, CHECKLIST
INDICATOR	SCALE RANGE	DISPAYS TORQUE VALUE	0 ✓		INDICATOR, CHECKLIST
INDICATOR	ON-OFF	DISPAYS A/C EXTERNAL LIGHTS	0 ✓		INDICATOR, CHECKLIST

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
IN TOLERANCE CONDITION	1	6600 ± 50	MUST DETECT AND CORRECTLY INTERPRET DISPLAY TO IDENTIFY POSSIBLE ENGINE MISFUNCTION
IN TOLERANCE CONDITION	1	294 ± 24	
LIGHT IS ON OR OFF	1		
LIGHTS ARE ON OR OFF	1		
IN TOLERANCE CONDITION	1	< 93°	
IN TOLERANCE CONDITION	1	80 - 100 PSI	
IN TOLERANCE CONDITION	1	< 110°	
IN TOLERANCE CONDITION	1	40 - 60 PSI	
IN TOLERANCE CONDITION	1		
IN TOLERANCE CONDITION	1	5 - 30 PSI	
EQUIPMENT IS ON OR OFF	1		
EQUIPMENT IS ON OR OFF	1		
LIGHTS, CONTROLS ARE ON OR OFF	1		
LIGHTS, CONTROLS ARE ON OR OFF	1		
IN TOLERANCE CONDITION	1	0 - 50	
IN TOLERANCE CONDITION	1		

# TASK ANALYSIS

SEGMENT: HOVER  
SUBSYSTEM: FLIGHT CONTROLS

MISSION PHASE: DEPARTURE  
FUNCTION: HOVER AIRCRAFT

TASK OBJECT	MODIFIER	OPERATOR ACTION	CONTROL		EQUIPMENT RESP		FEEDBACK		STIMULUS INPUT	OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
			NAME	OPTIONS	NAME	OPTIONS	VIA	OTHER					
1. CHECK	AREA CLEAR	VERIFIES NO OBSTRUCTIONS IN A/C HOVER AREA	N/A	N/A	N/A	N/A	C	✓	ONCOLIST, AREA OBSTRUCTIONS	SUFFICIENT CLEARANCE FOR HOVER	2		MUST DETECT AND EVALUATE TERRAIN FEATURES THAT PRESENT A POTENTIAL HAZARD TO HOVER
2. SELECT	CONTROL	POSITION CYCLIC TO NEUTRAL	✓	FORWARD, LEFT/RIGHT	ADJUSTS MAIN ROTOR ATTITUDE IN DIRECTION OF APPLIED FORCE (LEVEL)	✓	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO ACHIEVE NEUTRAL POSITION	1		MUST MANIPULATE CONTROL WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C ATTITUDE
3. POSITION	CONTROL	INCREASE COLLECTIVE	✓	UP-DOWN	ADJUSTS MAIN ROTOR BLADE ANGLE IN DIRECTION OF APPLIED FORCE (LEVEL)	✓	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO ACHIEVE LEFT MOVEMENT	1		MUST MANIPULATE CONTROL WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C ATTITUDE
4. POSITION	PEDALS	MAINTAIN HEADING	✓	IN-OUT	ADJUSTS AFT ROTOR BLADES IN DIRECTION OF APPLIED FORCE	✓	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO ACHIEVE A/C HEADING	1		
5. ADJUST	CONTROL	STABILIZE AIRCRAFT	✓	FORWARD, LEFT/RIGHT	ADJUSTS MAIN ROTOR ATTITUDE IN DIRECTION OF APPLIED FORCE (LEVEL)	✓	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO STABILIZE A/C	1	3 FT. ± 1	
6. ADJUST	CONTROL	STABILIZE AIRCRAFT	✓	UP-DOWN	ADJUSTS MAIN ROTOR BLADE ANGLE IN DIRECTION OF APPLIED FORCE (LEVEL)	✓	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO STABILIZE A/C	1	3 FT. ± 1	
7. MAINTAIN	HEADING	STABILIZE AIRCRAFT	✓	IN-OUT	ADJUSTS AFT ROTOR BLADES IN DIRECTION OF APPLIED FORCE	✓	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO STABILIZE A/C	1	± 5°	
8. MONITOR	TEMPERATURES	VERIFY TEMPERATURE IN TOLERANCE	✓	SCALE RANGE	DISPLAYS TEMPERATURE VALUES	✓	✓	INDICATOR DISPLAY	INDICATOR DISPLAY VALUES	TEMPERATURE IN TOLERANCE	1		MUST DETECT AND EVALUATE INDICATOR READINGS ACCURATELY TO DETERMINE POSSIBLE ENGINE MALFUNCTION
9. MONITOR	TEMPERATURES	VERIFY TEMPERATURE IN TOLERANCE	✓	SCALE RANGE	DISPLAYS TEMPERATURE VALUES	✓	✓	INDICATOR DISPLAY	INDICATOR DISPLAY VALUES	TEMPERATURE IN TOLERANCE	1		MUST DETECT AND EVALUATE INDICATOR READINGS ACCURATELY TO DETERMINE POSSIBLE ENGINE MALFUNCTION
10. MONITOR	PRESSURE	VERIFY PRESSURE IN TOLERANCE	✓	SCALE RANGE	DISPLAYS PRESSURE VALUES	✓	✓	INDICATOR DISPLAY	INDICATOR DISPLAY VALUES	PRESSURE IN TOLERANCE	1		
11. MONITOR	PRESSURE	VERIFY PRESSURE IN TOLERANCE	✓	SCALE RANGE	DISPLAYS PRESSURE VALUES	✓	✓	INDICATOR DISPLAY	INDICATOR DISPLAY VALUES	PRESSURE IN TOLERANCE	1		
12. MONITOR	TORQUE	VERIFY TORQUE IN TOLERANCE	✓	SCALE RANGE	DISPLAYS TORQUE VALUES	✓	✓	INDICATOR DISPLAY	INDICATOR DISPLAY VALUES	TORQUE IN TOLERANCE	1		
13. OBSERVE	INSTRUCTIONS	ADJUST A/C ATTITUDE IN ACCORDANCE WITH GUIDE 5 INSTRUCTIONS	✓	N/A	N/A	✓	✓	GROUND GUIDE	GROUND GUIDE	N/A	1		MUST DETECT INSTRUCTIVE SIGNALS AND RESPOND CORRECTLY TO AVOID POSSIBLE DAMAGE TO A/C

# TASK ANALYSIS

MISSION PHASE: DEPARTURE  
FUNCTION: HOVER/TAKE

SEGMENT: HOVER  
SUBSYSTEM: FLIGHT CONTROLS

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. ADJUST	CONTROL	CYCLIC	POSITION CYCLE AS REQUIRED TO HOVER/TAKE TO TAKEOFF AREA
2. ADJUST	CONTROL	COLLECTIVE	POSITION COLLECTIVE TO MAINTAIN 3 FT. HOVER
3. ADJUST	PEDALS	ANTI-TORQUE	MAINTAIN A/C HEADING
4. MONITOR	CLEARANCE	AIRCRAFT	OBSERVE TERRAIN TO MAINTAIN A/C CLEARANCE
5. MONITOR	TEMPERATURE	ENGINE	VERIFY ENGINE TEMPERATURE IN TOLERANCE
6. MONITOR	PRESSURE	ENGINE	VERIFY ENGINE PRESSURE IN TOLERANCE
7. MONITOR	TORQUE	ROTOR	VERIFY ROTOR TORQUE IN TOLERANCE
8. MONITOR	TEMPERATURE	TRANSMISSION	VERIFY TRANSMISSION TEMPERATURE IN TOLERANCE
9. MONITOR	PRESSURE	TRANSMISSION	VERIFY TRANSMISSION PRESSURE IN TOLERANCE

NAME	CONTROL DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
CYCLIC	FORWARD, LEFT/RIGHT	MAIN ROTOR TILTS IN DIRECTION OF APPLIED FORCE (PITCH ATTITUDE)	C /	TACTILE CONTROL POSITION A/C ATTITUDE
COLLECTIVE	UP-DOWN	MAIN ROTOR BLADES TILT IN DIRECTION OF APPLIED FOR (A TORQUE)	C /	TACTILE
PEDALS	IN-OUT	ANTI-ROTOR BLADES TILT IN DIRECTION OF APPLIED FORCE (A/C HEADING)	C /	TACTILE
N/A	N/A	N/A	C /	TERRAIN, A/C ATTITUDE
INDICATOR	SCALE RANGE	DISPLAY ENGINE TEMPERATURE VALUES	C /	INDICATOR DISPLAY
INDICATOR	SCALE RANGE	DISPLAY ENGINE PRESSURE VALUES	C /	INDICATOR DISPLAY
INDICATOR	SCALE RANGE	DISPLAY ROTOR TORQUE VALUES	C /	INDICATOR DISPLAY
INDICATOR	SCALE RANGE	DISPLAY TRANSMISSION TEMPERATURE VALUES	C /	INDICATOR DISPLAY
INDICATOR	SCALE RANGE	DISPLAY TRANSMISSION PRESSURE VALUES	C /	INDICATOR DISPLAY
				SEE MOVEMENT OF A CONTROL FOR DISCRETE TASKS. HOVERING AND MONITORING ARE CONTINUOUS TASKS THROUGHOUT THIS SECTION

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
AMOUNT/DIRECTION OF CONTROL MOVEMENT	1		MUST MANIPULATE CONTROL WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C ATTITUDE/DIRECTION
AMOUNT/DIRECTION OF CONTROL MOVEMENT	1	3 FT. ± 1	
AMOUNT/DIRECTION OF CONTROL MOVEMENT	1	± 5°	
DEGREE OF GROUND/AREA CLEARANCE	1		MUST DETECT AND EVALUATE TERRAIN FEATURES THAT ARE POSSIBLE HAZARD TO AIRCRAFT
IN TOLERANCE CONDITION	1		MUST DETECT AND EVALUATE READINGS ACCURATELY TO IDENTIFY POSSIBLE ENGINE MALFUNCTIONS
IN TOLERANCE CONDITION	1		
IN TOLERANCE CONDITION	1		
IN TOLERANCE CONDITION	1		
IN TOLERANCE CONDITION	1		



# TASK ANALYSIS

MISSION PHASE DEPARTURE  
FUNCTION CHECK FLIGHT INSTRUMENTS

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. CHECK	INDICATOR	TURN NEEDLE	VERIFY NEEDLE MOVES IN CORRECT DIRECTION
2. CHECK	INDICATOR	HEADING	VERIFY CORRECT OPERATION
3. CHECK	INDICATOR	SLIP	VERIFY CORRECT OPERATION
4. CHECK	INDICATOR	VERTICAL SITUATION	VERIFY CORRECT OPERATION
5. CHECK	INDICATOR	ALTITUDE	VERIFY CORRECT SETTING
6. CHECK	INDICATOR	ATTITUDE	VERIFY CORRECT OPERATION
7. CHECK	INDICATOR	AIR SPEED	VERIFY CORRECT OPERATION
8. CHECK	INDICATOR	TORQUE METER	VERIFY IN-TOLERANCE READING
9. CHECK	COMPASS	STANDBY	VERIFY CORRECT OPERATION

SEGMENT HOVER  
SUBSYSTEM INSTRUMENTS

NAME	CONTROL / DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK				STIMULUS INPUT
			SM	V	A	OTHER	
INDICATOR	RIGHT-LEFT	DISPLAYS DIRECTION OF A/C TURN	0	✓			DISPLAY READING
INDICATOR	0 - 360°	DISPLAYS COURSE IN DEGREES	0	✓			DISPLAY READING
INDICATOR		DISPLAYS TRIM SETTING	0	✓			DISPLAY READING
INDICATOR		DISPLAYS A/C VERTICAL ALTITUDE	0	✓			DISPLAY READING
INDICATOR	HEIGHT SCALE	DISPLAYS A/C HEIGHT	0	✓			DISPLAY READING
INDICATOR	MODE HIGH, LOW, LEFT, RIGHT	DISPLAYS A/C ATTITUDE	0	✓			DISPLAY READING
INDICATOR	SCALE RANGE	DISPLAYS A/C AIR SPEED	0	✓			DISPLAY READING
INDICATOR	SCALE RANGE	DISPLAYS ROTOR TORQUE	0	✓			DISPLAY READING
INDICATOR	0 - 360°	DISPLAYS DIRECTION	0	✓			DISPLAY READING

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
CORRECT POINTER MOVEMENT	1		NOT DETECT AND EVALUATE READINGS ACCURATELY TO IDENTIFY POTENTIAL ERROR/EQUIPMENT MALFUNCTIONS
HEADING DIRECTION	1		
STABLE ATTITUDE UP AND DOWN	1		
SUFFICIENT ALTITUDE	1		
STABLE ATTITUDE UP AND DOWN	1		
AIR SPEED IN TOLERANCE	1		
TORQUE IN TOLERANCE	1		
HEADING DIRECTION	1		

# TASK ANALYSIS

MISSION PHASE DEPARTURE  
FUNCTION CHECK ENGINE INSTRUMENTS

SEGMENT  
SUBSYSTEM

NOTE:  
INSTRUMENTS

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. CHECK	RPM	N <sub>1</sub> AND N <sub>2</sub> ROTOR	CHECK N <sub>1</sub> AND N <sub>2</sub> FOR IN TOLERANCE CONDITION
2. CHECK	PRESSURE	ENGINE OIL	CHECK PRESSURE FOR IN TOLERANCE
3. CHECK	TEMPERATURE	ENGINE OIL	CHECK TEMPERATURE FOR IN TOLERANCE
4. CHECK	PRESSURE	TRANSMISSION OIL	CHECK PRESSURE FOR IN TOLERANCE
5. CHECK	TEMPERATURE	TRANSMISSION OIL	CHECK TEMPERATURE FOR IN TOLERANCE
6. CHECK	QUANTITY	FUEL	CHECK QUANTITY FOR IN TOLERANCE
7. CHECK	PRESSURE	FUEL	CHECK PRESSURE FOR IN TOLERANCE
8. CHECK	CORRELATION	INSTRUMENT	PILOT AND COPILOT COMPARE INSTRUMENT READINGS

NAME	CONTROL / DISPLAY OPTIONS	EQUIPMENT RESP.	FEEDBACK			STIMULUS INPUT
			SCALE	V	A	
INDICATOR	SCALE RANGE	DISPLAY ENGINE RPM DISPLAY ROTOR RPM	D	✓		CHECKLIST, INDICATOR READING
INDICATOR	SCALE RANGE	DISPLAY ENGINE OIL PRESSURE	D	✓		CHECKLIST, INDICATOR READING
INDICATOR	SCALE RANGE	DISPLAY ENGINE TEMPERATURE	D	✓		CHECKLIST, INDICATOR READING
INDICATOR	SCALE RANGE	DISPLAY TRANSMISSION OIL PRESSURE	D	✓		CHECKLIST, INDICATOR READING
INDICATOR	SCALE RANGE	DISPLAY TRANSMISSION TEMPERATURE	D	✓		CHECKLIST, INDICATOR READING
INDICATOR	SCALE RANGE	DISPLAY FUEL QUANTITY	D	✓		CHECKLIST, INDICATOR READING
INDICATOR	SCALE RANGE	DISPLAY FUEL PRESSURE	D	✓		CHECKLIST, INDICATOR READING
INDICATOR	SCALE RANGE					

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
IN TOLERANCE CONDITION	1		MUST DETECT AND EVALUATE INDICATOR FOR TOLERANCE AND POTENTIAL ENGINE MALFUNCTION
IN TOLERANCE CONDITION	1	80 - 100	
IN TOLERANCE CONDITION	1	< 93°	
IN TOLERANCE CONDITION	1	40 - 60	
IN TOLERANCE CONDITION	1	< 110°	
IN TOLERANCE CONDITION	1		
IN TOLERANCE CONDITION	1	5 - 30	

# TASK ANALYSIS

MISSION PHASE DEPARTURE  
FUNCTION CHECK FLIGHT CONTROLS

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. CHECK	CONTROL	CYCLIC	ACTUATE CONTROL FOR FREEDOM OF MOVEMENT AND RESPONSE
2. CHECK	CONTROL	COLLECTIVE	ACTUATE CONTROL FOR FREEDOM OF MOVEMENT
3. CHECK	PEDALS	ANTI-TORQUE	ACTUATE CONTROL FOR FREEDOM OF MOVEMENT
4. CHECK	CONTROL	THROTTLE	ACTUATE CONTROL FOR FREEDOM OF MOVEMENT

CONTROL /DISPLAY		EQUIPMENT RESP	FEEDBACK		STIMULUS INPUT
NAME	OPTIONS		VIA	OTHER	
CYCLIC	FOR/ATE: LEFT/RIGHT	ROTOR TILTS IN DIRECTION OF APPLIED FORCE (ATTITUDE)	0 ✓	TACTILE	CONTROL POSITION A/C ATTITUDE
COLLECTIVE	UP-DOWN	ROTOR BLADES TILT IN DIRECTION OF APPLIED FORCE (TORQUE)	0 ✓	TACTILE	-
ANTI-TORQUE PEDALS	IN-OUT: LEFT-RIGHT	ATT ROTOR BLADES TILT IN DIRECTION OF APPLIED FORCE (HEADING)	0 ✓	TACTILE	-
THROTTLE	FUEL OPEN/ CLOSED		0 ✓	TACTILE	-

OPERATOR DECISION OPTIONS	CRIT RESP	SECURITY REQUIRED	COMMENTS
CONTROL IN TOLERANCE	1		MUST DETECT AND EVALUATE CONTROL RESPONSE FOR SATISFACTORY PERFORMANCE
CONTROL IN TOLERANCE	1		-
CONTROL IN TOLERANCE	1		-
CONTROL IN TOLERANCE	1		-

# TASK ANALYSIS

MISSION PHASE DEPARTURE  
FUNCTION MULTI-SHIP JOIN UP

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. RECEIVE	INSTRUCTIONS	JOIN UP	RECEIVES AND ACKNOWLEDGES JOIN UP LOCATION AND ORDER
2. OBSERVE	LOCATION	JOIN UP	OBSERVE AREA AND LOCATION OF OTHER AIRCRAFT
3. DETERMINE	POSITION	AIRCRAFT	DETERMINE WHEN AND WHERE AIRCRAFT WILL REPOSITION WITHIN FORMATION
4. REPOSITION	AIRCRAFT		ADJUST FLIGHT CONTROLS, HOVER/PAUSE TO FORMATION JOIN UP LOCATION

SEGMENT HOTEL  
SUBSYSTEM AIRCRAFT/FLIGHT CONTROLS

NAME	CONTROL / DISPLAY	EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
			D	V	A	
RADIO	TRANSMIT/RECEIVE	TRANSMIT MESSAGE	D ✓			MESSAGE CONTENT
N/A	N/A	N/A	D ✓			AIRSPACE, OTHER AIRCRAFT
N/A	N/A	N/A	D ✓			AIRSPACE, OTHER AIRCRAFT
FLIGHT CONTROLS	CONTROL RANGE	CHANGE A/C HEADING, SPEED, ALTITUDE AND ALTITUDE	C ✓			CONTROL POSITION AIRSPACE

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
TRANSMIT, RECEIVE	3		MUST RECEIVE AND UNDERSTAND RADIO INSTRUCTIONS TO AVOID POTENTIAL COLLISION
SAFE AIRSPACE	1		MUST DETECT AND EVALUATE OBJECTS WITHIN THE AIRSPACE POSING A POTENTIAL THREAT TO THE A/C
A/C POSITION IN FORMATION IN TOLERANCE	3		MUST PREDICT AND EVALUATE A/C POSITION ACCURATELY TO AVOID POSSIBLE COLLISION
A/C CONTROLS IN TOLERANCE	1		MUST ACTIVATE A/C CONTROLS CORRECTLY TO ACHIEVE DESIRED FLIGHT PATH



# TASK ANALYSIS

MISSION PHASE DEPARTURE			
FUNCTION COMMUNICATIONS UNIT OPERATIONS/TOWER			
VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. SELECT	RADIO		SWITCH ON DESIRED RADIO
2. SELECT	FREQUENCY	RADIO	TUNE IN CORRECT FREQUENCY
3. REPORT	TIME	DEPARTURE	CALL IN ETD
4. REPORT	STATUS	TAKEOFF	CALL TOWER, READY FOR TAKEOFF

SEGMENT TAKEOFF			
SUBSYSTEM COMMUNICATIONS			
NAME	CONTROL/DISPLAY		STIMULUS INPUT
	OPTIONS	EQUIPMENT RESP.	
SWITCH	UMF, WMF, FM	ENABLES SELECTED RADIO	CONTROL POSITION CHECKLIST
KNOB	FREQUENCY RANGE	ENABLES SELECTED FREQUENCY	CONTROL POSITION CHECKLIST
MICROPHONE	N/A	TRANSMITS MESSAGE	CHECKLIST
MICROPHONE	N/A	TRANSMITS MESSAGE	CHECKLIST

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
SELECT UMF, WMF OR FM	2		MUST SELECT APPROPRIATE RADIO
SELECT FROM FREQUENCY RANGE	2		MUST SELECT APPROPRIATE FREQUENCY
MESSAGE CONTENT	2		MUST CLEARLY AND ACCURATELY TRANSMIT MESSAGES
MESSAGE CONTENT	2		MUST CLEARLY AND ACCURATELY TRANSMIT MESSAGES

# TASK ANALYSIS

MISSION PHASE: DEPARTURE  
FUNCTION: PRE-TAKEOFF CHECK

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. STABILIZE	AIRCRAFT		ADJUST CYCLIC, COLLECTIVE, PEDALS TO MAINTAIN STABLE 3 FT. HOVER
2. CHECK	POWER	HOVER	CHECK TORQUE AND N1 GAUGES AND NOTE POWER REQUIRED TO HOVER
3. CHECK	DUAL "ACH		VISUALLY CHECK EACH INSTRUMENT/ GAUGE AND NOTE POWER REQUIRED TO CLIMB FOR DEPARTURE
4. CHECK	LIGHT	MASTER CAUTION	
5. CHECK	LIGHT	CAUTION PANEL	
6. CHECK	TEMPERATURE	ENGINE TRANSMISSION	
7. CHECK	PRESSURE	ENGINE TRANSMISSION	
8. CHECK	PRESSURE	FUEL	
9. CHECK	QUANTITY	FUEL	
10. CHECK	SCAS		
11. CHECK	FORCE TRIM		
12. CHECK	ARMAMENT PANEL		
13. CHECK	BEACON	ROTATING	
14. CHECK	INSTRUMENTS	FLIGHT	VISUALLY CHECK FLIGHT INSTRUMENTS TO INSURE PROPER OPERATION
15. CHECK	CLEARANCE	AIRSPACE	

SEGMENT: TAKEOFF  
SUBSYSTEM: INSTRUMENTS AND CONSOLE

NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
FLIGHT	PITCH, ROLL AND YAW	ADJUST AIRCRAFT ATTITUDE AND HEADINGS	C / TACTILE	CONTROL PITCH ATTITUDE
TORQUE METER	0 - 50 PSI	DISPLAYS	D /	
N1 GAUGE	0 - 100%	DISPLAYS	D /	
"ACH				GAUGE
LIGHTS	ON/OFF	DISPLAYS	D /	LIGHT
LIGHTS	ON/OFF	DISPLAYS	D /	LIGHT
GAUGE	IN TOLERANCE OUT TOLERANCE	DISPLAYS	D /	GAUGE
GAUGE	-	DISPLAYS	D /	GAUGE
GAUGE	-	DISPLAYS	D /	GAUGE
GAUGE	-	DISPLAYS	D /	GAUGE
SWITCH	ON/OFF	ACTIVATES POWER TO SYSTEM	D /	SWITCH
SWITCH	ON/OFF	ACTIVATES POWER TO SYSTEM	D /	SWITCH
SWITCH	ON/OFF	ACTIVATES POWER TO SYSTEM	D /	SWITCH
SWITCH	ON/OFF	ACTIVATES POWER TO SYSTEM	D /	SWITCH
GAUGES	IN/OFF OF TOLERANCE	DISPLAYS	D /	GAUGES
N/A	N/A	N/A	C /	SURROUNDING AREA

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
CYCLIC, COLLECTIVE, PEDALS	1		
IN TOLERANCE	1		
IN TOLERANCE	1		
ON/OFF	1		
ON/OFF	1		
IN TOLERANCE	1		
IN TOLERANCE	1		
IN TOLERANCE	1		
ON/OFF	1		
ON/OFF	1		
ON/OFF	1		
ON/OFF	1		
IN TOLERANCE	1		
IN TOLERANCE	1		
AREA CLEAR/UNCLEAR	1		

## TASK ANALYSIS -

[illegible]

## TASK ANALYSIS

MISSION PHASE				SUBSYSTEM		TAKEOFF	
FUNCTION				TAKEOFF		TAKEOFF	
TASK				OPERATOR ACTION		EQUIPMENT RESP.	
VERB	OBJECT	MODIFIER	OPERATOR ACTION	NAME	OPTIONS	EQUIPMENT RESP.	STIMULUS INPUT
1. ADJUST	CONTROL	COLLECTIVE	ADJUST POWER FOR TAKEOFF	COLLECTIVE	UP-DOWN	TILT MAIN ROTOR BLADE IN DIRECTION OF APPLIED FORCE	CONTROL POSITION
2. CHECK	TORQUE METER		VERIFY IN TOLERANCE	INDICATOR	SCALE RANGE	DISPLAYS ENGINE TORQUE VALUE	INDICATOR READING
3. CHECK	RPM	N <sub>1</sub>	VERIFY IN TOLERANCE	INDICATOR	SCALE RANGE	DISPLAYS PER CENT RPM	INDICATOR READING
4. CHECK	RPM	TACHOMETER	VERIFY IN TOLERANCE	INDICATOR	SCALE RANGE	DISPLAYS ENGINE RPM DISPLAYS ROTOR RPM	INDICATOR READING
5. ADJUST	CONTROL	CYCLIC	ADJUST ATTITUDE FOR TAKEOFF	CYCLIC	FORWARD, LEFT/RIGHT	TILT MAIN ROTOR IN DIRECTION OF APPLIED FORCE (PITCH ATTITUDE)	CONTROL POSITION
6. CHECK	INDICATOR	ATTITUDE	VERIFY A/C ATTITUDE	INDICATOR	SCALE RANGE	DISPLAYS A/C ATTITUDE	INDICATOR READING
7. CHECK	ATTITUDE	PITCH	VERIFY A/C ATTITUDE	TIP PATH PLANE & HORIZON	SCALE RANGE	DISPLAYS A/C ATTITUDE	INDICATOR READING
8. ADJUST	PEDAIS	ANTI-TORQUE	ADJUST LEFT OR RIGHT PEDAL AS REQUIRED	PEDAIS	IN-OUT/ LEFT-RIGHT	TILT AFT ROTOR BLADES IN DIRECTION OF APPLIED FORCE (YAW)	CONTROL POSITION
9. CHECK	INDICATOR	HEADING	VERIFY A/C ATTITUDE	INDICATOR	SCALE RANGE	DISPLAY A/C HEADING	INDICATOR READING
10. CHECK	TRIM BALL		ADJUST LEFT OR RIGHT PEDALS AS REQUIRED	INDICATOR		DISPLAY A/C ATTITUDE	INDICATOR READING
11. CHECK	OUTSIDE REFERENCE		OBSERVE OUTSIDE REFERENCE POINT	TIP PATH PLANE & HORIZON	SCALE RANGE	DISPLAYS A/C ATTITUDE	TERRAIN
12. MONITOR	AIRSPACE		OBSERVE FOR A/C CLEARANCE AND OBSTACLES, OTHER AIRCRAFT, ETC.	N/A	N/A	N/A	TERRAIN/AIRSPACE CLEARANCE
13. MONITOR	INSTRUMENTS	ENGINE, TRANS-MISSION, FLIGHT	VISUALLY SCAN INSTRUMENT PANEL, CHECK INSTRUMENT WITHIN GREEN ARC	INSTRUMENTS	IN TOLERANCE OUT TOLERANCE	DISPLAYS	GAUGES



# TASK ANALYSIS

MISSION PHASE  
FUNCTION

REAPTURE  
CLIMBOUT

SEGMENT  
SUBSYSTEM

CLIMBOUT

VERB	TASK	OBJECT	MODIFIER	OPERATOR ACTION
1. ADJUST	CONTROL	COLLECTIVE		ADJUST POWER FOR CLIMBOUT
2. CHECK	TORQUE METER			VERIFY IN TOLERANCE
3. CHECK	RPM	N <sub>1</sub>		VERIFY IN TOLERANCE
4. CHECK	RPM	TACHOMETER		VERIFY IN TOLERANCE
5. ADJUST	CONTROL	CYCLIC		ADJUST ATTITUDE FOR CLIMBOUT
6. CHECK	INDICATOR	ATTITUDE		VERIFY A/C ATTITUDE
7. CHECK	ATTITUDE	PITCH		VERIFY A/C ATTITUDE
8. ADJUST	PEDALS	ANTI-TORQUE		ADJUST LEFT OR RIGHT PEDAL AS REQUIRED
9. CHECK	INDICATOR	HEADING		VERIFY A/C ATTITUDE
10. CHECK	TRIM BALL			ADJUST LEFT OR RIGHT PEDALS AS REQUIRED
11. CHECK	OUTSIDE REFERENCE			OBSERVE OUTSIDE REFERENCE POINT
12. MONITOR	AIRSPACE			OBSERVE FOR A/C CLEARANCE AND OBSTACLES, OTHER AIRCRAFT, ETC.
13. MONITOR	INSTRUMENTS	ENGINE, TRANS-MISSION, FLIGHT		VISUALLY SCAN INSTRUMENT PANEL, CHECK INSTRUMENT WITHIN GREEN ARC (SEE 2, 3, 4, 5, 9, 10, ABOVE)

NAME	CONTROL	OPTIONS	EQUIPMENT RESP.	FEEDBACK				STIMULUS INPUT
				MAN	VIS	A	OTHER	
COLLECTIVE	UP-DOWN		TILT MAIN ROTOR BLADE IN DIRECTION OF APPLIED FORCE	D	✓		TACTILE	CONTROL POSITION
INDICATOR	SCALE RANGE		DISPLAYS ENGINE TORQUE VALUE	D	✓			INDICATOR READING
INDICATOR	SCALE RANGE		DISPLAYS PER CENT RPM	D	✓			INDICATOR READING
INDICATOR	SCALE RANGE		DISPLAYS ENGINE RPM DISPLAYS ROTOR RPM	D	✓			INDICATOR READING
CYCLIC	FORE/AFT, LEFT/RIGHT		TILT MAIN ROTOR IN DIRECTION OF APPLIED FORCE (PITCH ATTITUDE)	D	✓		TACTILE	CONTROL POSITION
INDICATOR	SCALE RANGE		DISPLAYS A/C ATTITUDE	D	✓			INDICATOR READING
TIP PATH PLANE & HORIZON	SCALE RANGE		DISPLAYS A/C ATTITUDE	D	✓			INDICATOR READING
PEDALS	IN-OUT/ LEFT-RIGHT		TILT AFT ROTOR BLADES IN DIRECTION OF APPLIED FORCE (TRIM)	D	✓		TACTILE	CONTROL POSITION
INDICATOR	SCALE RANGE		DISPLAY A/C HEADING	D	✓			INDICATOR READING
INDICATOR			DISPLAY A/C ATTITUDE	D	✓			INDICATOR READING
TIP PATH PLANE & HORIZON	SCALE RANGE		DISPLAYS A/C ATTITUDE	C	✓			TERRAIN
N/A	N/A		N/A	C	✓			TERRAIN/AIRSPACE
INSTRUMENTS	IN TOLERANCE OUT TOLERANCE		DISPLAYS	C	✓			GAUGES

OPERATOR DECISION OPTIONS	CDT RESP	ACCURACY REQUIRED	COMMENTS
AMOUNT AND DIRECTION OF CONTROL MOVEMENT	1		MUST ADJUST CONTROLS WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C RESPONSE
IN TOLERANCE RANGE	1		MUST DETECT AND EVALUATE READINGS TO IDENTIFY POTENTIAL ENGINE/EQUIPMENT MALFUNCTIONS
IN TOLERANCE RANGE	1		
IN TOLERANCE RANGE	1		
AMOUNT AND DIRECTION OF CONTROL MOVEMENT	1		MUST ADJUST CONTROLS WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C RESPONSE
IN TOLERANCE RANGE	1		MUST DETECT AND EVALUATE READINGS TO IDENTIFY POTENTIAL ENGINE/EQUIPMENT MALFUNCTIONS
N/A	1		MUST DETECT AND EVALUATE TERRAIN FOR PROPER ATTITUDE
AMOUNT AND DIRECTION OF CONTROL MOVEMENT	1		MUST ADJUST CONTROLS WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C RESPONSE
IN TOLERANCE RANGE	1		MUST DETECT AND EVALUATE READINGS TO IDENTIFY POTENTIAL ENGINE/EQUIPMENT MALFUNCTIONS
IN TOLERANCE RANGE	1		
TERRAIN CLEARANCE	1		MUST DETECT AND EVALUATE TERRAIN FEATURES FOR POSSIBLE HAZARD TO A/C
TERRAIN/AIRSPACE CLEARANCE	1		
	1		



# TASK ANALYSIS

MISSION PHASE DEPARTURE  
FUNCTION NORMAL CRUISE

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. ADJUST	CONTROL	COLLECTIVE	ADJUST POWER FOR NORMAL CRUISE
2. CHECK	TORQUE METER		VERIFY IN TOLERANCE
3. CHECK	RPM	N <sub>1</sub>	VERIFY IN TOLERANCE
4. CHECK	RPM	TACHOMETER	VERIFY IN TOLERANCE
5. ADJUST	CONTROL	CYCLIC	ADJUST ATTITUDE FOR NORMAL CRUISE
6. CHECK	INDICATOR	ATTITUDE	VERIFY A/C ATTITUDE
7. CHECK	ATTITUDE	PITCH	VERIFY A/C ATTITUDE
8. ADJUST	PEDALS	ANTI-TORQUE	ADJUST LEFT OR RIGHT PEDAL AS REQUIRED
9. CHECK	INDICATOR	HEADING	VERIFY A/C ATTITUDE
10. CHECK	TRIM BALL		ADJUST LEFT OR RIGHT PEDALS AS REQUIRED
11. CHECK	OUTSIDE REFERENCE		OBSERVE OUTSIDE REFERENCE POINT
12. MONITOR	AIRSPACE		OBSERVE FOR A/C CLEARANCE AND OBSTACLES, OTHER AIRCRAFT, ETC.
13. MONITOR (SEE 2, 3, 4, 5, 9, 10, ABOVE)	INSTRUMENTS	ENGINE, TRANS-MISSION, FLIGHT	VISUALLY SCAN INSTRUMENT PANEL, CHECK INSTRUMENT WITHIN GREEN ARC

SEGMENT LEVEL OF  
SUBSYSTEM

NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK		STIMULUS INPUT
			VIA	OTHER	
COLLECTIVE	UP-DOWN	TYLT MAIN ROTOR BLADE IN DIRECTION OF APPLIED FORCE	D /	TACTILE	CONTROL POSITION
INDICATOR	SCALE RANGE	DISPLAYS ENGINE TORQUE VALUE	D /		INDICATOR READING
INDICATOR	SCALE RANGE	DISPLAYS PER CENT RPM	D /		INDICATOR READING
INDICATOR	SCALE RANGE	DISPLAYS ENGINE RPM DISPLAYS ROTOR RPM	D /		INDICATOR READING
CYCLIC	FORWARD, LEFT/RIGHT	TYLT MAIN ROTOR IN DIRECTION OF APPLIED FORCE (PITCH ATTITUDE)	D /	TACTILE	CONTROL POSITION
INDICATOR	SCALE RANGE	DISPLAYS A/C ATTITUDE	D /		INDICATOR READING
TIP PATH PLANE & HORIZON	SCALE RANGE	DISPLAYS A/C ATTITUDE	D /		INDICATOR READING
PEDALS	IN-OUT/ LEFT-RIGHT	TYLT AFT ROTOR BLADES IN DIRECTION OF APPLIED FORCE (TRIM)	D /	TACTILE	CONTROL POSITION
INDICATOR	SCALE RANGE	DISPLAY A/C HEADING	D /		INDICATOR READING
INDICATOR	SCALE RANGE	DISPLAY A/C ATTITUDE	D /		INDICATOR READING
TIP PATH PLANE & HORIZON	SCALE RANGE	DISPLAYS S/C ATTITUDE	D /		TERRAIN
N/A	N/A	N/A	C /		TERRAIN/AIRSPACE CLEARANCE
INSTRUMENTS	IN TOLERANCE OUT TOLERANCE	DISPLAYS	C /		GAUGES

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
AMOUNT AND DIRECTION OF CONTROL MOVEMENT	1		MUST ADJUST CONTROLS WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C RESPONSE
IN TOLERANCE RANGE	1		MUST DETECT AND EVALUATE READINGS TO IDENTIFY POTENTIAL ENGINE/EQUIPMENT MALFUNCTIONS
IN TOLERANCE RANGE	1		
IN TOLERANCE RANGE	1		
AMOUNT AND DIRECTION OF CONTROL MOVEMENT	1		MUST ADJUST CONTROLS WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C RESPONSE
IN TOLERANCE RANGE	1		MUST DETECT AND EVALUATE READINGS TO IDENTIFY POTENTIAL ENGINE/EQUIPMENT MALFUNCTIONS
N/A	1		MUST DETECT AND EVALUATE TERRAIN FOR PROPER ATTITUDE
AMOUNT AND DIRECTION OF CONTROL MOVEMENT	1		MUST ADJUST CONTROLS WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C RESPONSE
IN TOLERANCE RANGE	1		MUST DETECT AND EVALUATE READINGS TO IDENTIFY POTENTIAL ENGINE/EQUIPMENT MALFUNCTIONS
IN TOLERANCE RANGE	1		
TERRAIN CLEARANCE	1		MUST DETECT AND EVALUATE TERRAIN FEATURES FOR POSSIBLE HAZARD TO A/C
TERRAIN/AIRSPACE CLEARANCE	1		
	1		

# TASK ANALYSIS

MISSION PHASE REPORT USE  
FUNCTION MONITOR INSTRUMENTS AND AIRSPACE (CROSS CHECKS)

VERB	TASK	MODIFIER	OPERATOR ACTION
1. CHECK	INDICATOR	TORQUE METER	VISUALLY OBSERVE READING ON INDICATED GAUGE
2. CHECK	TACHOMETER	N <sub>1</sub>	-
3. CHECK	GAUGE	EGT	-
4. CHECK	INDICATOR	DUAL TACH	-
5. CHECK	INDICATOR	AIRSPEED	-
6. CHECK	ALTITUDE, ASI	ALTITUDE, ASI	-
7. CHECK	INDICATOR	RADIO MAG	-
8. REPEAT STEPS 1, 2, AND 3			
9. CHECK	INDICATOR	FUEL PRESSURE	-
10. CHECK	INDICATOR	FUEL QUANTITY	-
11. CHECK	INDICATOR	TRANSMISSION OIL PRESSURE	-
12. CHECK	INDICATOR	ENGINE OIL PRESSURE	-
13. CHECK	INDICATOR	TRANSMISSION OIL TEMPERATURE	-
14. CHECK	INDICATOR	ENGINE OIL TEMPERATURE	-
15. ADJUST	CONTROLS	FLIGHT	ADJUST CYCLIC, COLLECTIVE AND BRACE AS NECESSARY TO MAINTAIN DESIRED FLIGHT ATTITUDE
16. MONITOR	AIRSPACE		OBSERVE A/C CLEARANCE AND OBSTACLE AVOIDANCE
NOTE: THOSE INSTRUMENTS CHECKED MOST OFTEN ARE: 1. TORQUE 2. DUAL TACH 3. EGT 4. N <sub>1</sub>			

SEGMENT LEVEL OFF  
SUBSYSTEM

NAME	CONTROL	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
TORQUE METER	0 - 50	DISPLAYS TORQUE (POWER) BEING USED	C ✓	GAUGE, COLLECTIVE POSITION
N <sub>1</sub> TACH	0 - 100%	DISPLAYS PER CENT RPM	C ✓	-
EGT	0 - 1000°	DISPLAYS TEMPERATURE	C ✓	-
DUAL TACH		DISPLAYS ROTOR RPM DISPLAYS ENGINE RPM	C ✓	GAUGE
AIRSPEED INDICATOR	0 - 190 KTS	DISPLAYS INDICATED AIR-SPEED	C ✓	GAUGE
ALTITUDE, ASI	RANGE CLIMB, DESCENT	DISPLAYS ALTITUDE, RATE OF CLIMB	C ✓	GAUGE
RMI	0 - 360°	DISPLAYS AIRCRAFT HEADING	C ✓	GAUGE
FUEL PRESSURE	5 - 30	DISPLAYS FUEL PRESSURE	C ✓	GAUGE
QUANTITY	-	DISPLAYS FUEL QUANTITY	C ✓	GAUGE
OIL PRESSURE	0 - 100	DISPLAYS OIL PRESSURE	C ✓	GAUGE
OIL PRESSURE	0 - 100	DISPLAYS OIL PRESSURE	C ✓	GAUGE
OIL TEMPERATURE		DISPLAYS OIL TEMPERATURE	C ✓	GAUGE
OIL TEMPERATURE		DISPLAYS OIL TEMPERATURE	C ✓	GAUGE
FLIGHT		DETERMINES AIRCRAFT ALTITUDE	C ✓	INSTRUMENTS & TERRAIN REF.
N/A				TERRAIN, AIRSPACE

OPERATOR DECISION OPTIONS	CHIT HELP	ACCURACY REQUIRED	COMMENTS
INCREASE, DECREASE	2	+ 2	MOST DEFECT, IDENTIFY AND EVALUATE INSTRUMENT DISPLAYS AND CORRELATE POSITIONING INFORMATION WITH FLIGHT DESCRIPTION AND MAINTAIN SAFE FLIGHT
INCREASE, DECREASE	2	+ 1	-
INCREASE, DECREASE	2	+15	-
	2	+25	-
	2	+ 5	-
INCREASE, DECREASE TORQUE	2	+50	-
	2	+ 5°	-
	2	+ 1	-
	2	+25	-
	2	+ 3	-
	2	+ 3	-
	2	+ 5	-
	2	+ 5	-
CHANGE OR HOLD CONSTANT	2		
TERRAIN, AIRSPACE			

## TASK ANALYSIS

MISSION PHASE				DEPARTURE		COMMUNICATIONS (DEPARTURE CONTROL)	
FUNCTION							
TASK		MODIFIER		OPERATOR ACTION			
VERB	OBJECT						
1. SELECT	RADIO			SWITCH ON DESIRED RADIO			
2. ADJUST	FREQUENCY	RADIO		TUNE IN APPROPRIATE FREQUENCY			
3. TRANSMIT	MESSAGE			INFORM TOWER CLEAR OF TRAFFIC AREA			
4. ADJUST	FREQUENCY	RADIO		CHANGE TO OPERATIONAL FREQUENCY			
5. TRANSMIT	MESSAGE			INFORM BASE OPERATIONS OF TAKEOFF TIME			
6. ADJUST	FREQUENCY	RADIO		CHANGE TO ARTY ADVISORY FREQUENCY			

SEGMENT		LEVEL OF		TASK ANALYSIS	
SUBSYSTEM					
NAME	CONTROL / DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT	
	NAME	ENABLES SELECTED RADIO	D / V / A / OTHER	CONTROL POSITION	
SELECTOR SWITCH	UHF, VHF, FM	ENABLES SELECTED RADIO	D / V / A / OTHER	CONTROL POSITION	
ROTARY SWITCH	FREQUENCY BAND	ENABLES SELECTED FREQUENCY	D / V / A / OTHER	CONTROL POSITION	
N/A	N/A	N/A	D / V / A / OTHER	CONTROL POSITION	
ROTARY SWITCH	FREQUENCY BAND	ENABLES SELECTED FREQUENCY	D / V / A / OTHER	CONTROL POSITION	
N/A	N/A	N/A	D / V / A / OTHER	CONTROL POSITION	
ROTARY SWITCH	FREQUENCY BAND	ENABLES SELECTED FREQUENCY	D / V / A / OTHER	CONTROL POSITION	

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
SELECT UHF, VHF OR FM	1		MUST SELECT APPROPRIATE RADIO FOR MESSAGE TRANSMISSION
SELECT FREQUENCY BAND	1		MUST SELECT CORRECT FREQUENCY FOR MESSAGE TRANSMISSION
MESSAGE CONTENT	1		MUST TRANSMIT MESSAGE CLEARLY AND ACCURATELY

# TASK ANALYSIS

MISSION PHASE DEPARTURE  
FUNCTION PERFORM LEVEL OFF CHECK/ACTIVATE ECU

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. CHECK	ATTITUDE INDI-CATOR		ARE WINGS LEVEL
2. CHECK	ALTITUDE, VSI		VERIFY NO CHANGE
3. CHECK	NEEDLE, BALL	TURN, TRIM	NEEDLE UP, BALL CENTERED
4. CHECK	HEADING INDI-CATOR		CONSTANT, CHECK FOR NO CHANGE
5. CHECK	ENGINE TECH. ROTOR		VERIFY 6600 RPM
6. CHECK	INSTRUMENTS		VERIFY "GREEN RANGE"
7. CHECK	CAUTION WARNING LIGHTS		VERIFY ALL LIGHTS OUT
8. CHECK	CONSOLE SWITCHES		VERIFY IN CORRECT POSITION
9. CHECK	ARMAMENT PANEL		VERIFY IN "SAFE" CONDITION
10. ACTIVATE	SELECTOR SWITCH	ECU	TURN ECU ON
11. ADJUST	TEMPERATURE	ECU	SELECT TEMPERATURE CONTROL

SEGMENT LEVEL OFF  
SUBSYSTEM INSTRUMENTS AND CONSOLE

CONTROL		EQUIPMENT RESP.	FEEDBACK	STIMULUS INPUT
NAME	OPTIONS			
INDICATOR		DISPLAY A/C ATTITUDE	D ✓	CHECKLIST INDICATOR READING
INDICATOR		DISPLAY A/C ALTITUDE	D ✓	"
INDICATOR		DISPLAY A/C ATTITUDE	D ✓	"
INDICATOR		DISPLAY A/C DIRECTION	D ✓	"
INDICATOR		DISPLAY ENGINE/ROTOR RPM	D ✓	"
INDICATOR	SCALE RANGE	DISPLAY A/C CONDITIONS	D ✓	"
INDICATOR	ON-OFF	DISPLAY CAUTION WARNING LIGHTS	D ✓	"
SWITCHES	ON-OFF	ENABLE A/C SYSTEMS	D ✓	CHECKLIST CONTROL POSITION
SWITCHES/INDICATORS	N/A	N/A	D ✓	"
SWITCH	ON-OFF	ENABLE ECU	D ✓	"
SWITCH	RANGE	ADJUST TEMPERATURE	D ✓	"

OPERATOR DECISION OPTIONS	CRIT. RESP.	ACCURACY REQUIRED	COMMENTS
IN TOLERANCE CONDITION	1		MUST DETECT AND EVALUATE READINGS TO IDENTIFY POTENTIAL ENGINE/EQUIPMENT MALFUNCTIONS
IN TOLERANCE CONDITION	1		"
IN TOLERANCE			"
IN TOLERANCE CONDITION	1		"
IN TOLERANCE CONDITION	1		"
IN TOLERANCE CONDITION	1		"
IN TOLERANCE CONDITION	1		"
ON-OFF	1		MUST DETECT AND EVALUATE SWITCH POSITIONS IN TERMS OF A/C SAFETY, CONTROLLABILITY AND MISSION REQUIREMENTS
ON-OFF, IN TOLERANCE CONDITION	1		MUST DETECT AND EVALUATE READINGS TO IDENTIFY POTENTIAL ENGINE/EQUIPMENT MALFUNCTIONS, AND EVALUATE SWITCH POSITIONS IN TERMS OF A/C SAFETY, CONTROLLABILITY AND MISSION REQUIREMENTS
ON-OFF	1		MUST DETECT AND EVALUATE SWITCH POSITIONS IN TERMS OF A/C SAFETY, CONTROLLABILITY AND MISSION REQUIREMENTS
ADJUST RANGE	1		"



# TASK ANALYSIS

MISSION PHASE EN ROUTE  
FUNCTION MONITOR/ADJUST AIRSPEED

PAGE 1 OF 2

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. ADJUST	CONTROL	COLLECTIVE	ACTIVATE COLLECTIVE CONTROL TO ATTAIN DESIRED BLADE PITCH ANGLE TO CORRESPOND TO DESIRED AIRSPEED
2. ADJUST	CONTROL	CYCLIC	ACTIVATE CYCLIC CONTROL TO ATTAIN DESIRED ROTOR ANGLE TO CORRESPOND TO DESIRED IAS
3. MONITOR	INDICATOR	AIRSPEED	OBSERVE AIRSPEED INDICATOR TO CORRELATE AIRSPEED WITH DESIRED VELOCITY
4. MONITOR	SPEED	GROUND	OBSERVE RATE OF TERRAIN PASSAGE
5. MONITOR	INDICATOR	ALTITUDE	OBSERVE ALTITUDE TO CORRELATE AIRSPEED TO ALTITUDE
6. ADJUST	PEDALS	AFT ROTOR	ACTIVATE APPROPRIATE PEDAL (S) TO ACHIEVE DESIRED A/C HEADING (TRIM)
7. MONITOR	INDICATOR	PITCH ATTITUDE	OBSERVE INDICATOR TO ASCERTAIN A/C IS IN DESIRED PITCH ATTITUDE
8. MONITOR	ATTITUDE	PITCH	OBSERVE TIP PATH PLANE

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SEGMENT CRUISE NOE  
SUBSYSTEM FLIGHT CONTROL/DISPLAY

NAME	CONTROL/DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
			YES NO C /	
COLLECTIVE CONTROL	UP-DOWN	ALTERS PITCH OF ROTOR BLADES TO CONFORM TO DIRECTION OF APPLIED FORCE (I.E. UP-DOWN) (CONFORM TO POWER)	C /	VISUAL (EXTERNAL) AIRSPEED INDICATOR, TORQUE METER, ALTITUDE
CYCLIC CONTROL	FORE-AFT (LEFT-RIGHT)	ALTERS ROTOR ATTITUDE TO CONFORM TO DIRECTION OF APPLIED FORCE (I.E. FORE-AFT) (CONFORM TO POWER)	C /	VISUAL (EXTERNAL) PITCH ATTITUDE INDICATOR, TORQUE METER, ALTITUDE
AIRSPEED INDICATOR	N/A	TRANSMITS INDICATION OF AIRSPEED TO THE GROUND	C /	VISUAL (EXTERNAL) AIRSPEED INDICATOR
N/A	N/A	N/A	C /	TERRAIN
ALTITUDE	N/A	TRANSMITS INDICATION OF A/C HEIGHT FROM GROUND	C /	VISUAL (EXTERNAL) ALTITUDE INDICATOR, PITCH ATTITUDE INDICATOR
AFT ROTOR PEDALS	LEFT-IN-OUT RIGHT-IN-OUT	ALTERS PITCH OF ROTOR BLADES TO OFFSET MAIN ROTOR TORQUE AND STEER HELICOPTER	C /	VISUAL (EXTERNAL) ALTITUDE INDICATOR (TRIM)
PITCH ATTITUDE	N/A	TRANSMITS VISUAL INDICATION OF A/C PITCH ATTITUDE	C /	VISUAL (EXTERNAL) PITCH ATTITUDE INDICATOR
ROTOR TIP	N/A	N/A		HORIZON

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OPERATOR DECISION OPTIONS	CRIT. RESP.	ACCURACY REQUIRED	COMMENTS
MAY ACTIVATE CONTROL UP OR DOWN	1	MAINTAIN AIRSPEED TO WITHIN + 5K IAS OF REQUIRED IAS	MUST ACTIVATE CONTROL IN APPROPRIATE DIRECTION TO ACHIEVE DESIRED AIRSPEED AND PREVENT POSSIBLE LOSS OF CONTROL WITH GROUND OR OBSTACLES
MAY ACTIVATE CONTROL FORE-AFT AND LEFT-RIGHT	1	MAINTAIN AIRSPEED TO WITHIN + 5K IAS OF REQUIRED IAS	
N/A	2	MUST READ AIRSPEED TO WITHIN + 5K	MUST DETECT AND INTERPRET AIRSPEED INDICATOR CORRECTLY TO ADJUST AIRSPEED TO DESIRED AIRSPEED
N/A	2	MUST READ TO WITHIN + 10	MUST DETECT AND INTERPRET ALTITUDE INDICATOR CORRECTLY TO ADJUST A/C HEIGHT TO DESIRED ALTITUDE AS REQUIRED BY MISSION
MAY ACTIVATE EITHER OR BOTH PEDALS IN OR OUT	1	TRIM BALL CENTERED	MUST ACTIVATE PEDALS APPROPRIATELY TO MAINTAIN REQUIRED HEADING AND ATTITUDE OF HELICOPTER
N/A	2		MUST DETECT AND INTERPRET INDICATOR CORRECTLY TO ADJUST A/C PITCH ATTITUDE WITH RESPECT TO MISSION REQUIREMENTS

Continued on next page



# TASK ANALYSIS

MISSION PHASE EN-SITE  
FUNCTION MONITOR/ADJUST AIRSPEED

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VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
9. MONITOR	INDICATOR	N <sub>1</sub>	OBSERVE INDICATOR TO ASCERTAIN TURBINE SPEED IS APPROPRIATE TO DESIRED AIRSPEED
10. MONITOR	INDICATOR	TORQUE	OBSERVE INDICATOR TO ASCERTAIN TORQUE SETTING IS APPROPRIATE TO AIRSPEED

NAME	CONTROL/DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
			V	A	OTHER	
N <sub>1</sub> INDICATOR	0 - 100%	TRANSMITS VISUAL INDICATION OF A/C TURBINE SPEED	C	✓		TURBINE SPEED INDICATOR (N <sub>1</sub> )
TORQUE METER	0 - 50	INCREASE/DECREASE POWER	C	✓		COLLECTIVE

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
N/A	2		MUST DETECT AND INTERPRET INDICATOR CORRECTLY TO ADJUST MAINTAIN POWER REQUIREMENTS TO MEET AIRSPEED NEEDS

# TASK ANALYSIS

MISSION PHASE EN-ROUTE  
FUNCTION MONITOR/ADJUST ALTITUDE

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. ADJUST	CONTROL	COLLECTIVE	ACTUATE CONTROL TO ACHIEVE MAIN ALTITUDE AND REMAIN BELOW MASKING EFFECT; 2) OTHER AIRCRAFT; 3) BIRDS
2. MONITOR	AIRSPACE		OBSERVE: 1) TERRAIN AND AIRSPACE AROUND HELD TO IDENTIFY POTENTIAL FLIGHT HAZARDS AND REMAIN BELOW MASKING EFFECT; 2) OTHER AIRCRAFT; 3) BIRDS
3. MONITOR	ALTITUDE		MONITOR A/C ALTITUDE
4. ADJUST	PEDALS	AFT ROTOR	ACTUATE APPROPRIATE PEDALS TO ACHIEVE A/C HEADING AND TRIM

SEGMENT CRUISE NOE  
SUBSYSTEM FLIGHT CONTROL

NAME	CONTROL/DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK D V A OTHER	STIMULUS INPUT
COLLECTIVE CONTROL	UP-DOWN	TILTS MAIN ROTOR BLADE UP/DOWN APPLIED FORCE (TITON)	D ✓	VISUAL (EXTERNAL) ALTITUDE
NONE	N/A	N/A	C ✓	EXTERNAL VISUAL
ALTITUDE DISPLAY	N/A	ALTITUDE DISPLAY FLUCTUATES IN ACCORDANCE WITH ALTITUDE CHANGE	D ✓	ALTITUDE DISPLAY
AFT ROTOR PEDALS	LEFT: IN-OUT RIGHT: IN-OUT ROTOR (TRIM)	ALTERS DITCH OF AFT ROTOR	D ✓	VISUAL (EXTERNAL) HEADING INDICATOR ATTITUDE INDICATOR FOR SHALL & PITCH

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
MAY ACTUATE CONTROL UP OR DOWN INCREASE/DECREASE TORQUE	1		MUST ACTUATE CONTROL APPROPRIATE TO ACHIEVE ALTITUDE AND AVOID A/C IMPACT WITH OBSTACLES ON THE GROUND
NONE	1		MUST DETECT, IDENTIFY AND EVALUATE FLIGHT HAZARDS AND REMAIN BELOW MASKING EFFECT; 2) OTHER AIRCRAFT; 3) BIRDS
NONE	2		MUST DETECT AND INTERPRET DISPLAY CORRECTLY TO PRECLUDE IMPACT OF A/C WITH GROUND
MAY ACTUATE EITHER PEDAL IN OR OUT	1		MUST ACTUATE PEDALS APPROPRIATELY TO ACHIEVE A/C HEADING AND TRIM

# TASK ANALYSIS

MISSION PHASE EN ROUTE  
FUNCTION ADJUST/MONITOR HEADING

SEGMENT CRUISE WPC  
SUBSYSTEM

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. POSITION	CYCLIC	CONTROL	ACTUATES CONTROL TO KEEP A/C ON DESIRED COURSE
2. POSITION	PEDALS	AFT ROTOR	ACTUATES CONTROLS TO KEEP A/C NOSE ON COURSE
3. MONITOR	INDICATOR	HEADING	OBSERVE INDICATOR TO DETERMINE HEADING
4. MONITOR	AIRSPACE		OBSERVES TERRAIN, OBSTACLES, ETC.
5. MAINTAIN	COURSE	DESIRED	OBSERVES TERRAIN, OBSTACLES, ETC.

NAME	CONTROL OPTIONS	EQUIPMENT RESP.	FEEDBACK			STIMULUS INPUT
			MAN	ENV	OTHER	
CYCLIC	FORWARD/LEFT RIGHT/LEFT	TILTS MAIN ROTOR IN DIRECTION OF APPLIED FORCE	D	/	TACTILE	HEADING INDICATOR CONTROL POSITION VISUAL OBSERV.
PEDALS	RIGHT/LEFT IN/OUT	TILTS AFT ROTOR BLADE IN DIRECTION OF APPLIED FORCE (TRIM)	D	/	TACTILE	"
INDICATOR	SCALE RANGE	DISPLAYS A/C HEADING	D	/		INDICATOR DISPLAY
N/A	N/A	N/A	D	/		AIRSPACE
N/A	N/A	N/A	D	/		HEADING INDICATOR CONTROL POSITION VISUAL OBSERV.

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
POSITION CONTROL (FORWARD/LEFT AFT) OR RIGHT/LEFT	1	+ 5°	MUST ACTUATE CONTROL IN APPROPRIATE DIRECTION TO MAINTAIN CONTROL OF A/C AND AVOID CONTACT WITH OBSTACLES
POSITION CONTROLS IN OR OUT OF LEFT PEDAL	1	BALL CENTERED	
RANGE OF A/C HEADING SCALE	1		MUST DETECT AND ACCURATELY INTERPRET INDICATOR TO MAINTAIN DESIRED COURSE.
N/A	2		MUST DETECT AND INTERPRET VISUAL OBSTA- CLES TO AVOID IMPACT OF A/C WITH THESE OBSTACLES
POSITION CONTROL (FORWARD/LEFT AFT) OR RIGHT/LEFT	1	+ 5°	MUST ACTUATE CONTROL IN APPROPRIATE DIRECTION TO MAINTAIN CONTROL OF A/C AND AVOID CONTACT WITH OBSTACLES

# TASK ANALYSIS

MISSION PHASE ENROUTE  
FUNCTION MONITOR INSTRUMENTS (CROSS CHECK)

VERB	TASK	OBJECT	MODIFIER	OPERATOR ACTION
1. CHECK	INDICATOR	TORQUE METER		VISUALLY OBSERVE READING ON INDICATED GAUGE
2. CHECK	TACHOMETER	N <sub>1</sub>		-
3. CHECK	GAUGE	EGT		-
4. CHECK	INDICATOR	DUAL TACH		-
5. CHECK	INDICATOR	AIRSPEED		-
6. CHECK	ALTIMETER, VSI			-
7. CHECK	INDICATOR	RADIO MAG		-
8. CHECK	INDICATOR	FUEL PRESSURE		-
9. CHECK	INDICATOR	FUEL QUANTITY		-
10. CHECK	INDICATOR	TRANSMISSION OIL PRESSURE		-
11. CHECK	INDICATOR	ENGINE OIL PRESSURE		-
12. CHECK	INDICATOR	TRANSMISSION OIL TEMPERATURE		-
13. CHECK	INDICATOR	ENGINE OIL TEMPERATURE		-
14. ADJUST	CONTROLS	FLIGHT		ADJUST CYCLIC, COLLECTIVE AND POWER AS NECESSARY TO MAINTAIN DESIRED FLIGHT ATTITUDE
15. MONITOR	AIRSPACE			OBSERVE A/C CLEARANCE AND OBSTACLE AVOIDANCE

SEGMENT CRUISE ROUTE  
SUBSYSTEM INSTRUMENTS

NAME	CONTROL	OPTIONS	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
TORQUE METER	0 - 50		DISPLAYS TORQUE (POWER) BEING USED	C /	GAUGE, COLLECTIVE POSITION
N <sub>1</sub> TACH	0 - 100%		DISPLAYS PERCENT RPM	C /	
EGT GAUGE	0 - 1000°		DISPLAYS TEMPERATURE	C /	
DUAL TACH			DISPLAYS ROTOR RPM DISPLAYS ENGINE RPM	C /	GAUGE
AIRSPEED INDICATOR	0 - 190 KTS		DISPLAYS INDICATED AIRSPEED	C /	GAUGE
ALTIMETER VSI	RANGE CLIMB, DESCENT		DISPLAYS ALTITUDE DISPLAYS RATE OF CLIMB	C /	GAUGE
RPM	0 - 360°		DISPLAYS AIRCRAFT HEADING	C /	GAUGE
FUEL PRESSURE	5 - 30		DISPLAYS FUEL PRESSURE	C /	GAUGE
QUANTITY			DISPLAYS FUEL QUANTITY	C /	GAUGE
OIL PRESSURE	0 - 100		DISPLAYS OIL PRESSURE	C /	GAUGE
OIL PRESSURE	0 - 100		DISPLAYS OIL PRESSURE	C /	GAUGE
OIL TEMPERATURE			DISPLAYS OIL TEMPERATURE	C /	GAUGE
OIL TEMPERATURE			DISPLAYS OIL TEMPERATURE	C /	GAUGE
FLIGHT			DETERMINES AIRCRAFT ATTITUDE	C /	INSTRUMENTS & OUTSIDE REFERENCE TERRAIN, AIRSPACE
N/A					

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
INCREASE, DECREASE		± 2	MUST DETECT, IDENTIFY AND EVALUATE INSTRUMENTS AND POSITIONS ACCURATELY TO ASSESS A/C OPERATION AND MAINTAIN SAFE FLIGHT
INCREASE, DECREASE		± 1	
		± 15	
		± 25	
		± 5	
		± 50	
INCREASE, DECREASE PITCH ALTITUDE		± 5	
		± 1	
		± 25	
		± 3	
		± 3	
		± 5	
CHANGE OR HOLD CONSTANT TERRAIN, AIRSPACE		± 5	

## TASK ANALYSIS

[illegible]



# TASK ANALYSIS

MISSION PHASE EN-ROUTE  
FUNCTION INITIAL WSK

SEGMENT CRUISE WSK  
SUBSYSTEM

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. ADJUST	ALTITUDE	AIRCRAFT	KEEPS A/C ABOVE OBSTACLES, FOLLOWS SUBSISTENCE ROUTES, MAINTAINS SUBSISTENCE TERRAIN BY POSITIONING COLLECTIVE, PEDALS, CYCLIC CONTROLS AS REQUIRED
2. ADJUST	AIRSPEED	AIRCRAFT	VARIES AIRSPEED AS REQUIRED FOR SAFE FLIGHT PATH BY ADJUSTING COLLECTIVE PITCH, CYCLIC AND PEDALS
3. ADJUST	ATTITUDE	AIRCRAFT	ADJUSTS CYCLIC CONTROL AS REQUIRED TO MAINTAIN AND MAINTAIN DESIRED CONDITION

NAME	CONTROL/DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
			SEEK	V	A	
COLLECTIVE	UP-DOWN	TILT MAIN ROTOR BLADES - C IN DIRECTION OF APPLIED FORCE	C	✓		VISUAL OBSERVA- TION OF AIRSPACE INDICATORS
PEDALS(S)	RIGHT, IN-OUT LEFT, IN-OUT	ADJUSTS TAIL ROTOR BLADES TO GIVE DIREC- TIONAL STABILITY (TRIM)	C	✓		TACTILE
CYCLIC	FORE/AFT, LEFT, RIGHT	TILT MAIN ROTOR IN DIRECTION OF APPLIED FORCE	C	✓		TACTILE

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
DIRECTION OF APPLIED FORCE TO COLLECTIVE CONTROL	1		CORRECT CONTROL ADJUSTMENTS MUST BE MADE TO AVOID IMPACT OF A/C WITH OBSTACLES. LEGAL HONEYDEWERS WITH COLLECTIVE
DIRECTION OF APPLIED FORCE TO RIGHT OR LEFT PEDAL	1		
DIRECTION OF APPLIED FORCE TO CYCLIC CONTROL	1		

# TASK ANALYSIS

MISSION PHASE: EN ROUTE  
FUNCTION: MAINTAIN OBSTACLE CLEARANCE

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. MONITOR	CLEARANCE	ROTOR BLADE	VISUAL OBSERVATION OF MAIN ROTOR BLADES IN REFERENCE TO CLEARANCE WITH SURROUNDING TERRAIN AND OBSTACLES
2. MONITOR	CLEARANCE	SKIDS	VISUAL OBSERVATION OF SKIDS IN REFERENCE TO CLEARANCE WITH TERRAIN AND OBSTACLES
3. OBSERVE	OBSTACLES		IDENTIFY APPROACHING OBSTACLES AND DETERMINE AVOIDANCE CLEARANCES REQUIRED
4. MONITOR	ATTITUDE	TAIL	MONITOR PITCH ATTITUDE TO DETECT AND AVOID TAIL LOW CONDITION
5. ADJUST	CONTROL	COLLECTIVE PITCH	ADJUSTS COLLECTIVE PITCH CONTROL TO AVOID TAIL LOW AND PROVIDE OBSTACLE CLEARANCE

SEGMENT: CRUISE  
SUBSYSTEM: FLIGHT CONTROL

NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
			YES	NO	OTHER	
BLADES	N/A	N/A	C ✓		PER-CEIVED	OBSTACLES IN FLIGHT PATH
SKIDS	N/A	N/A	C ✓			OBSTACLES IN FLIGHT PATH
N/A	N/A	N/A	C ✓			OBSTACLES IN FLIGHT PATH
ATTITUDE INDICATOR	N/A	TRANSMITS INFORMATION RELATIVE TO A/C ATTITUDE	D ✓			1) PITCH ATTITUDE INDICATOR POSITION
PITCH ATTITUDE			D ✓			
COLLECTIVE PITCH CONTROL	UP-DOWN	CHANGES MAIN ROTOR BLADE PITCH ANGLE IN DIRECTION OF APPLIED FORCE (TORQUE)	D ✓			1) EXTERNAL VISUAL INDICATOR 2) ALTITUDE INDICATION

OPERATOR DECISION OPTIONS	CRIT. RESP	ACCURACY REQUIRED	COMMENTS
N/A	2		MUST JUDGE CLEARANCES ACCURATELY ENOUGH TO PREVENT IMPACT OF ROTOR BLADES WITH OBSTACLES
N/A	2		MUST JUDGE CLEARANCES ACCURATELY ENOUGH TO PREVENT IMPACT OF SKIDS WITH OBSTACLES
N/A	2		MUST JUDGE SIZE AND LOCATION OF APPROACHING OBSTACLES WITH SUFFICIENT DECISION TO DETERMINE REQUIRED CLEARANCE BETWEEN A/C AND OBSTACLE
N/A	2		MUST DETECT CHANGES IN A/C ATTITUDE RESULTING IN A "TAIL LOW" ATTITUDE
N/A	1		MUST MAINTAIN CONTROL IN APPROPRIATE POSITION TO AVOID TAIL LOW AND ACHIEVE A/C ATTITUDE SUFFICIENT TO CLEAR OBSTACLES

# TASK ANALYSIS

MISSION PHASE EN ROUTE  
FUNCTION MONITOR OBSTACLE CLEARANCE

SEGMENT CRUISE MODE  
SUBSYSTEM

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. COMMUNICATE	WARNING	OBSTACLE	VERBALLY TRANSMIT WARNING OF CHANGING TERRAIN ELEVATION
2. COMMUNICATE	WARNING	VEGETATION	VERBALLY TRANSMIT WARNING OF CHANGE IN TERRAIN VEGETATION
3. MONITOR	AIRSPACE		SCAN AIRSPACE TO DETECT AND IDENTIFY OBSTACLES, TERRAIN CHANGES AND/OR CONDITIONS REQUIRING MODIFICATION OF A/C FLIGHT PATH, SPEED, ALTITUDE

NAME	CONTROL/DISPLAY OPTIONS	EQUIPMENT RESP.	FEEDBACK V/A OTHER	STIMULUS INPUT
N/A	N/A	N/A	C /	VISUAL TERRAIN FEATURES
N/A	N/A	N/A	C /	VISUAL TERRAIN FEATURES
N/A	N/A	N/A	C /	VISUAL TERRAIN FEATURES

OPERATOR DECISION OPTIONS	CRIT. RESP.	ACCURACY REQUIRED	COMMENTS
N/A	2		MUST CLEARLY AND ACCURATELY VERBALLY TRANSMIT TERRAIN CHANGE DETAILS
N/A	2		MUST CLEARLY AND ACCURATELY VERBALLY TRANSMIT TERRAIN CHANGE DETAILS
N/A	2		MUST DETECT AND IDENTIFY FACTORS IN THE ENVIRONMENT THAT COULD LEAD TO THE A/C FLIGHT PATH, SPEED AND/OR ALTITUDE

# TASK ANALYSIS

MISSION PHASE ENROUTE  
FUNCTION DETERMINE POSITION

SEGMENT CRUISE XDE  
SUBSYSTEM

VERB	TASK		MODIFIER	OPERATOR ACTION
	OBJECT	KNOWLEDGE		
1. DETERMINE	INTERSECTION	KNOWN POINTS		OBSERVE LOCATION OF TWO KNOWN POINTS
2. CHECK	POINT	BENEATH AIRCRAFT		OBSERVE POINT BENEATH AIRCRAFT
3. ESTIMATE	DISTANCE	FROM KNOWN POINTS		ESTIMATE DISTANCES
4. ESTIMATE	TIME	FROM KNOWN POINT		ESTIMATE TIME
5. IDENTIFY	FEATURES	MAP & TERRAIN		CORRELATE MAP & TERRAIN FEATURES
6. VERIFY	CHECKPOINTS			OBSERVE MAP & TERRAIN
7. IDENTIFY	POSITION	AIRCRAFT		DETERMINE AIRCRAFT POSITION

NAME	CONTROL/DISPLAY OPTIONS		EQUIPMENT RESP.	FEEDBACK				STIMULUS INPUT
				D	V	A	OTHER	
N/A	N/A	N/A	N/A	D ✓				TERRAIN
N/A	N/A	N/A	N/A	D ✓				TERRAIN
N/A	N/A	N/A	N/A	D ✓				TERRAIN
N/A	N/A	N/A	N/A	D ✓				TERRAIN
MAP	TERRAIN	DISPLAYS TERRAIN	D ✓					MAP, TERRAIN
MAP	TERRAIN	DISPLAYS TERRAIN	D ✓					MAP, TERRAIN
N/A	N/A	N/A	N/A	D ✓				MAP, TERRAIN

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
N/A	1		MUST DETECT AND IDENTIFY CHECKPOINTS
N/A	1		NONE
N/A	1		MUST ACCURATELY ESTIMATE DISTANCES
N/A	1		MUST ACCURATELY ESTIMATE TIME
MAP SCALE	1		MUST SELECT MAP OF APPROPRIATE SCALE TO GIVE ACCURATE POSITION COORDINATES
N/A	1		MUST DETECT AND IDENTIFY CHECKPOINTS
N/A	1		MUST IDENTIFY A/C POSITION ACCURATELY

# TASK ANALYSIS

MISSION PHASE EN-ROUTE				FUNCTION PERFORM INTERSECTION	
VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION		
1. SELECT	LOCATIONS	MAP	PICKS TWO OR MORE TERRAIN FEATURES		
2. DETERMINE	DIRECTION	LOCATIONS	DETERMINE DIRECTION OF FEATURES FROM A/C (MAG COMPASS OR RMI)		
3. ESTIMATE	DISTANCE	LOCATION	ESTIMATE DISTANCE TO EACH FEATURE		
4. PERFORM	INTERSECT	LOCATION LINE	INTERSECT FEATURE DIRECTION LINES WITH A/C		
5. DETERMINE	POSITION	AIRCRAFT	NOTES INTERSECTION POINT		
6. VERIFY	CHECKPOINTS		VERIFY BY OBSERVATION OF AREA AND TERRAIN FEATURES		

SEGMENT CRUISE NOE		SUBSYSTEM		CONTROL/DISPLAY OPTIONS		EQUIPMENT RESP		FEEDBACK		STIMULUS INPUT	
NAME	OPTIONS	NAME	OPTIONS	DISP	FEEDBACK	DISP	FEEDBACK	DISP	FEEDBACK	DISP	FEEDBACK
MAP	MAP SCALE	N/A								MAP	
MAP	MAP SCALE	N/A								MAP	
MAP	MAP SCALE	N/A								MAP	
MAP	MAP SCALE	DISPLAYS INTERSECTING LINES								MAP	
MAP	MAP SCALE	N/A								MAP	
MAP	MAP SCALE	N/A								TERRAIN FEATURES	

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
MAP SCALE	1	ACCURATE TO SIX DIGITS	MUST DETECT AND IDENTIFY APPROPRIATE TERRAIN FEATURES
MAP SCALE	1		MUST IDENTIFY CORRECT DIRECTION
MAP SCALE	1		NONE
N/A	1	ACCURATE TO SIX DIGITS	MUST DETECT AND IDENTIFY POINTS OF ORIGIN
MAP SCALE	1	ACCURATE TO SIX DIGITS	MUST DETECT AND IDENTIFY INTERSECTION POINT
MAP SCALE	1		MUST DETECT AND IDENTIFY TERRAIN FEATURES WITH RELATION TO INTERSECT POINT



## TASK ANALYSIS

[illegible]

## TASK ANALYSIS

[illegible]

## TASK ANALYSIS-

[illegible]

# TASK ANALYSIS

MISSION PHASE EN-ROUTE  
FUNCTION COMMUNICATE - CLEARANCE, POSITION

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. SELECT	RADIO		SWITCHES TO RADIO SELECTED
2. ADJUST	FREQUENCY	RADIO	TUNE IN DESIRED FREQUENCY
3. TRANSMIT	POSITION		SEND GRID COORDINATES, LANDMARKS, ETC.
4. TRANSMIT	REQUEST	ARTY CLEARANCE	REQUEST CLEARANCE AND HAZARD INFORMATION TO DESTINATION
5. RECEIVE	ADVISORY	ARTY	RECEIVE INFORMATION RELATIVE TO POSSIBLE FLIGHT HAZARDS, ETC.

SEGMENT CRUISE NOE  
SUBSYSTEM COMMUNICATIONS

CONTROL / DISPLAY		EQUIPMENT RESP.	FEEDBACK		STIMULUS INPUT
NAME	OPTIONS		N/A	OTHER	
SWITCH	FM, DMF, DMF	ENABLES RADIO TRANSMIT/D RECEIVE	✓	TACTILE	IC PANEL, RADIOIS SWITCH POSITION
DIAL	FREQUENCY RANGE	ENABLES SELECT FREQUEN- CY	✓	TACTILE	IC PANEL, DIAL POSITION
MICROPHONE	N/A	TRANSMITS MESSAGE	✓	✓	MAP, TERRAIN
MICROPHONE	N/A	TRANSMITS MESSAGE	✓	✓	SOP
HEADSET	N/A	TRANSMITS MESSAGE	✓	✓	SOP

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
FM, DMF, DMF	1		MUST IDENTIFY AND SELECT APPROPRIATE RADIO
FREQUENCY RANGE	1		MUST IDENTIFY AND TUNE IN CORRECT FREQUENCY
MESSAGE CONTENT	1		MUST TRANSMIT ACCURATE POSITION INFORMATION
MESSAGE CONTENT	1		NONE
N/A	1		NONE



# - TASK ANALYSIS -

SEGMENT MANUEVER  
SUBSYSTEM

MISSION PHASE ENGAGEMENT  
FUNCTION MANUEVER INTO ADP

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION	CONTROL			EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT	OPERATOR DECISION OPTIONS	CUT RESP	ACCURACY REQUIRED	COMMENTS
				NAME	OPTIONS	MAP		D	V	A	OTHER				
1. MAINTAIN	COURSE	SELECTED	NAVIGATE ON COURSE SELECTED TO ADP	MAP	MAP SCALE	DISPLAY TERRAIN	D ✓				MAP TERRAIN	MAP SCALE	1	ACCURATE TO SIX DIGIT COORDINATE TO ADP	MUST DETECT AND IDENTIFY FLIGHT PATH OBSTACLES
2. MAINTAIN	WEEK		ADJUST A/C FOR MINIMUM ALTITUDE OVER TERRAIN	N/A	N/A	N/A	C ✓				TERRAIN, A/C FLIGHT CONTROLS	N/A	1		MUST MAINTAIN A/C CONTROL AND ALTITUDE TO PREVENT IMPACT WITH OBSTACLES
3. MONITOR	OBSTACLES	FLIGHT PATH	VISUALLY INSPECT AIRSPACE IN FLIGHT PATH	N/A	N/A	N/A	C ✓				TERRAIN	N/A	1		MUST DETECT AND IDENTIFY FLIGHT PATH OBSTACLES
4. CHECK	WIND		OBSERVE WATER, TREES, WEATHER REPORTS, FEEL	N/A	N/A	N/A	D ✓				TERRAIN	N/A	1		EXPERIENCE WILL AID IN CORRECT CALCULATION
5. SELECT	PATH	APPROACH	DETERMINE APPROACH DIRECTION	N/A	N/A	N/A	D ✓				TERRAIN	N/A	1		MUST DETECT AND IDENTIFY FLIGHT PATH OBSTACLES
6. SELECT	POINT	TERMINATION	DETERMINE HOVER SPOT	N/A	N/A	N/A	D ✓				TERRAIN	N/A	1		
7. EVALUATE	SIZE	HOVER POINT	ASCERTAIN HOVER CLEARANCE	N/A	N/A	N/A	D ✓				TERRAIN	N/A	1		
8. MAINTAIN	HOVER	STABLE	HOVER AIRCRAFT USING CYCLIC, PEDALS, COLLECTIVE	FLIGHT		DETERMINE AIRCRAFT POSITION/OPERATION	C ✓				AIRCRAFT POSITION AND ALTITUDE	ADJUST FLIGHT CONTROLS	1		

# TASK ANALYSIS

MISSION PHASE ENGAGEMENT  
FUNCTION POP-UP MANEUVER

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. ADJUST	CONTROL	COLLECTIVE	INCREASE POWER TO GAIN ALTITUDE
2. ADJUST	PEDALS	AFT ROTOR	MAINTAIN HEADING CONTROL
3. ADJUST	ATTITUDE	AIRCRAFT	POSITION AIRCRAFT SO OBSERVER CAN VISUALLY SCAN TARGET AREA
4. MAINTAIN	CLEARANCE	OBSTACLE	CONTROL AIRCRAFT MOVEMENT
5. PERFORM	MANEUVER	POP-UP	RAISE AIRCRAFT TO TARGET OBSERVATION HEIGHT

SEGMENT MANEUVER  
SUBSYSTEM

NAME	CONTROL		EQUIPMENT RESP	FEEDBACK				STIMULUS INPUT
	OPTIONS	INCREASE/DECREASE		SEEK	V	A	OTHER	
COLLECTIVE			ADJUSTS ENGINE POWER IN DIRECTION OF CONTROL MOVEMENT	C	✓		TACTILE	ENGINE INDICATORS, CONTROL POSITION
PEDALS		LEFT/RIGHT, IN/OUT	ADJUSTS TAIL ROTOR TO MAINTAIN HEADING	C	✓		TACTILE	
CYCLIC		LEFT/RIGHT FORWARD/AFT	ADJUSTS A/C ATTITUDE	C	✓		TACTILE	
AIRCRAFT CONTROLS		CONTROL RANGE	AIRCRAFT ATTITUDE, ALTITUDE, HEADING AND AIRSPEED AS INPUT	C	✓			
AIRCRAFT CONTROLS		CONTROL RANGE	AIRCRAFT ATTITUDE, ALTITUDE, HEADING AND AIRSPEED AS INPUT	C	✓			

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
AMOUNT OF INCREASE	1		MUST ADJUST TO SUFFICIENT VALUE TO ACHIEVE DESIRED LIFT
DEGREE, DIRECTION AND SPECIFIC PEDAL ACTUATION	1		MUST ADJUST TO MAINTAIN CONTROL AND HEADING OF AIRCRAFT
DEGREE, DIRECTION AND SPECIFIC PEDAL ACTUATION	1		
CONTROL RANGE	1		
CONTROL RANGE	1		

# TASK ANALYSIS

MISSION PHASE				SUBSYSTEM				SEGMENT				TASK ANALYSIS			
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# TASK ANALYSIS

MISSION PHASE ENGAGEMENT  
FUNCTION PERFORM ENACT-DRIP/REPORT

SEGMENT WRECKERS  
SUBSYSTEM AIRCRAFT

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. CHECK	CLEARANCE	OBSTACLE	OBSERVE AREA OF INTENDED FLIGHT PATH FOR OBSTACLES
2. ADJUST	CONTROL	COLLECTIVE	LOWER COLLECTIVE CONTROL
3. ADJUST	CONTROL	PEDALS	MAINTAIN AIRCRAFT TRIM
4. ADJUST	CONTROL	CYCLIC	MAINTAIN AIRCRAFT ATTITUDE
5. MONITOR	STATE	DESCENT	OBSERVE TERRAIN CLEARANCE
6. ASSESS	CONDITION	WASK	VERIFY CLEARANCE OF THREATENING ENVIRONMENT
7. ADJUST	CONTROLS	AIRCRAFT	MAINTAIN AIRCRAFT AT STABLE HOVER
8. CHECK	INSTRUMENTS	ENGINE	SCAN INSTRUMENTS FOR IN TOLERANCE RANGES
9. REPORT	DETECTION	ENEMY	TRANSMIT REPORT OF ENEMY THREAT AND EVASIVE ACTION

CONTROL		FEEDBACK		EQUIPMENT RESP		STIMULUS INPUT	
NAME	OPTIONS	YES	NO	YES	NO	VIA	OTHER
N/A	N/A			N/A			TERRAIN
COLLECTIVE	UP-DOWN			VARIES MAIN BLADE PITCH IN DIRECTION OF ACTIVATION			CONTROL POSITION GROUND CLEARANCE
PEDAL(S)	IN/OUT, RIGHT/LEFT			MAINTAINS AIRCRAFT HEADING			CONTROL POSITION GROUND CLEARANCE
CYCLIC	FORWARD/LEFT/RIGHT			MAINTAINS AIRCRAFT ATTITUDE			CONTROL POSITION GROUND CLEARANCE
N/A	N/A			N/A			TERRAIN, GROUND CLEARANCE
N/A	N/A			N/A			TERRAIN, GROUND CLEARANCE
CONTROLS	RANGE			ADJUSTS/MAINTAINS AIRCRAFT CONDITION			CONTROL POSITION TERRAIN
INDICATORS	SCALE RANGE			DISPLAY AIRCRAFT ENGINE CONDITIONS			INDICATOR DISPLAYS
RADIO	UHF, VHF, FM			TRANSMITS MESSAGE			SOP

OPERATOR DECISION OPTIONS	CRIT. RESP	ACCURACY REQUIRED	COMMENTS
N/A	1		MUST DETECT AND EVALUATE POSSIBLE FLIGHT PATH OBSTACLES
DEGREE OF CONTROL MOVEMENT	1		MUST CORRECTLY ADJUST CONTROLS TO MAINTAIN AIRCRAFT CONTROL
DEGREE OF CONTROL MOVEMENT	1		
DEGREE OF CONTROL MOVEMENT	1		
N/A	1		MUST DETECT AND EVALUATE POSSIBLE FLIGHT PATH OBSTACLES
N/A	1		MUST EVALUATE WASK CONDITION CORRECTLY TO AVOID ENEMY DETECTION
DEGREE OF CONTROL MOVEMENT	1		MUST CORRECTLY ADJUST CONTROLS TO MAINTAIN AIRCRAFT CONTROL
IN TOLERANCE RANGE	1		MUST DETECT AND EVALUATE INDICATOR READING CORRECTLY TO ASSURE IN TOLERANCE OPERATION
MESSAGE CONTENT	1		MUST CLEARLY AND ACCURATELY TRANSMIT THREAT DATA



## TASK ANALYSIS

MISSION PHASE ENGAGEMENT				SEGMENT MANEUVER				SUBSYSTEM AIRCRAFT				OPERATOR ACTION				OPERATOR DECISION OPTIONS				COMMENTS			
FUNCTION PERFORM EVADE DASH				TASK OBJECT MODIFIER				CONTROL OPTIONS				EQUIPMENT RESP.				FEEDBACK				STIMULUS INPUT			
VERB	OBJECT	MODIFIER	OPERATOR ACTION	NAME	UP/DOWN	LEFT/RIGHT	FOR/AFT	FOR/AFT	LEFT/RIGHT	FOR/AFT	LEFT/RIGHT	FOR/AFT	LEFT/RIGHT	FOR/AFT	LEFT/RIGHT	FOR/AFT	LEFT/RIGHT	FOR/AFT	LEFT/RIGHT	FOR/AFT	LEFT/RIGHT	FOR/AFT	LEFT/RIGHT
1. CHECK	CLEARANCE	OBSTACLE	RESERVE AREA OF INTENDED FLIGHT FOR OBSTACLES	N/A																			
2. ADJUST	CONTROL	COLLECTIVE	ADJUST COLLECTIVE AS REQUIRED TO MAINTAIN OR CHANGE ALTITUDE AS REQUIRED	COLLECTIVE	UP/DOWN																		
3. ADJUST	CONTROL	PEDALS	MAINTAINS AIRCRAFT TRIM	PEDALS	LEFT/RIGHT																		
4. ADJUST	CONTROL	CYCLIC	ADJUST CYCLIC CONTROL TO MANEUVER AIRCRAFT TO POSITION AWAY FROM ENEMY THREAT LATERALLY TO HIDE OR LATERAL DROP TO HIDE	CYCLIC	FOR/AFT	LEFT/RIGHT																	
5. ASSESS	CONDITION	MASK	VERIFY CLEAR OF THREAT	N/A																			



## TASK ANALYSIS

[illegible]

# TASK ANALYSIS

MISSION PHASE				ENGAGEMENT				SEGMENT MANUEVER				SUBSYSTEM				OPERATOR				COMMENTS			
FUNCTION				PERFORM LANDING (UTILITY)				CONTROL				EQUIPMENT RESP				FEEDBACK				STIMULUS INPUT			
TASK				OPERATOR ACTION				NAME				OPTIONS				D				V			
OBJECT				MODIFIER				FLIGHT				D				A				TERRAIN			
1. INTERCEPT	COURSE	APPROACH	COLLECTIVE	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE																			
2. ACQUISITION	CONTROL	COLLECTIVE	COLLECTIVE	LOWER COLLECTIVE PITCH TO INITIATE DESCENT																			
3. ACQUISITION	CONTROL	CYCLIC	CYCLIC	INCREASE AFT CYCLIC TO INITIATE DECELERATION																			
4. ACQUISITION	PEDALS	ANTI-TORQUE	ANTI-TORQUE	INCREASE RIGHT PEDAL TO COMPEN- SATE FOR TORQUE																			
5. MAINTAIN	CLEARANCE	OBSTACLE	OBSTACLE	ADJUST ALTITUDE DURING THE DES- CENT SO AS TO STAY ABOVE ANY OBSTACLES IN FLIGHT PATH																			
6. MONITOR	INSTRUMENTS	ENGINE, FLIGHT	ENGINE, FLIGHT	CROSS CHECK OF BOTH ENGINE AND FLIGHT INSTRUMENTS THROUGHOUT FLIGHT																			
7. ACQUISITION	CONTROL	COLLECTIVE	COLLECTIVE	INCREASE OR DECREASE COLLECTIVE PITCH AS REQUIRED TO MAINTAIN A CONSTANT DECELERATION TO ARRIVE AT POINT OF INTENDED LANDING AT ZERO AIR SPEED																			
8. ACQUISITION	CONTROL	CYCLIC	CYCLIC	INCREASE AFT CYCLIC TO OBTAIN A CONSTANT DECELERATION TO ARRIVE AT POINT OF INTENDED LANDING AT ZERO AIR SPEED																			
9. ACQUISITION	PEDALS	ANTI-TORQUE	ANTI-TORQUE	ADJUST PEDAL POSITION IN CONJUNC- TION WITH COLLECTIVE TO MAINTAIN DESIRED HEADING AND TRIM																			
10. EVALUATE	APPROACH			DETERMINE IF LANDING IS POSSIBLE OR IF GO AROUND WILL BE NECESSARY																			
11. EVALUATE	TERRAIN			DETERMINE IF LANDING IS POSSIBLE OR IF GO AROUND WILL BE NECESSARY																			

# TASK ANALYSIS

MISSION PHASE ENGAGEMENT (UTILITY)  
FUNCTION TERMINATE LANDING

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. SELECT	POINT	TOUCHDOWN	OBSERVE THAT POINT AT WHICH AIRCRAFT WILL LAND
2. ADJUST	CONTROL	COLLECTIVE	INCREASE COLLECTIVE PITCH TO SLOW DESCENT AND STOP AIRCRAFT AT 3 FT. POWER
3. ADJUST	CONTROL	CYCLIC	ADJUST CYCLIC TO CHANGE PITCH ATTITUDE TO THAT WHICH WILL LEVEL AIRCRAFT TO STOP FORWARD MOTION
4. ADJUST	PEDALS	ANTI-TORQUE	INCREASE LEFT PEDAL TO COMPENSATE FOR INCREASE IN TORQUE, THEN INCREASE RIGHT PEDAL NECESSARY TO MAINTAIN CONSTANT HEADING
5. CHECK	INSTRUMENTS	ENGINE AND MOTOR	OBSERVE INSTRUMENTS IN GREEN ARC
6. STABILIZE	AIRCRAFT		MAINTAIN AIRCRAFT AT 3 FEET POWER, CONSTANT HEADING
7. MONITOR	CLEARANCE	AREA	OBSERVE CLEARANCE OF MOTOR BLADES AND AIRCRAFT FROM ANY OBSTACLES

SEGMENT WHEELES  
SUBSYSTEM

NAME	CONTROL		EQUIPMENT RESP	FEEDBACK		STIMULUS INPUT
	OPTIONS	DISC		V/A	OTHER	
N/A	N/A		N/A	D /		TERRAIN
COLLECTIVE	INCREASE / DECREASE		ADJUST TORQUE (POWER)	D /		TACTILE CONTROL POSITION
CYCLIC	LEFT/RIGHT FORE/AFT		ADJUST PITCH ATTITUDE, DIRECTION OF FLIGHT	D /		TACTILE CONTROL POSITION
PEDALS	LEFT/RIGHT		ADJUST AIRCRAFT TRIM	D /		TACTILE CONTROL POSITION
TACH, TORQUE M1, EGT	0 - 6600, 0-50, 0 - 1000		DISPLAYS ASSOCIATED EQUIPMENT STATUS	D /		GAUGES CHECKLIST
FLIGHT			CHANGES AIRCRAFT ATTITUDE	C /		TACTILE PITCH ATTITUDE
N/A	N/A		N/A	C /		TERRAIN

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
TOUCHDOWN POINT			
INCREASE/DECREASE			
LEFT/RIGHT, FORE/AFT			
LEFT/RIGHT			
IN/NOT IN TOLERANCE			

# TASK ANALYSIS

MISSION PHASE: DEPART LANDING ZONE  
 FUNCTION: DEPART LANDING ZONE

VERB	TASK OBJECT	MODIFIER	OPERATION ACTION
1. CHECK	PASSENGERS		CHECK PASSENGERS ON OR OFF, AS APPROPRIATE
2. ADJUST	CONTROL	COLLECTIVE	ADJUST POWER FOR TAKEOFF
3. CHECK	TORQUE METER		VERIFY IN TOLERANCE
4. CHECK	RPM	$n_1$	VERIFY IN TOLERANCE
5. CHECK	RPM	TACHOMETER	VERIFY IN TOLERANCE
6. ADJUST	CONTROL	CYCLIC	ADJUST ATTITUDE FOR TAKEOFF
7. CHECK	INDICATOR	ATTITUDE	VERIFY AIRCRAFT ATTITUDE
8. CHECK	ATTITUDE	PITCH	VERIFY AIRCRAFT ATTITUDE
9. ADJUST	PEDALS	ANTI-TORQUE	ADJUST LEFT OR RIGHT PEDAL AS REQUIRED
10. CHECK	INDICATOR	HEADING	VERIFY AIRCRAFT ATTITUDE
11. CHECK	TRIM BALL		ADJUST LEFT OR RIGHT PEDALS AS REQUIRED
12. CHECK	OUTSIDE REFERENCE		OBSERVE OUTSIDE REFERENCE POINT
13. MONITOR	AIRSPACE		OBSERVE FOR AIRCRAFT CLEARANCE AND OBSTACLES, OTHER AIRCRAFT, ETC.
14. MONITOR (SEE 2, 3, 4, 6, 9, 10 ABOVE)	INSTRUMENTS	ENGINE, TRANS-MISSION, FLIGHT	VISUALLY SCAN INSTRUMENT PANEL, CHECK INSTRUMENT WITHIN GREEN ARC

SEGMENT: MANUEVER  
 SUBSYSTEM:

NAME	CONTROL/DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK V/A/OTHER	STIMULUS INPUT
COLLECTIVE	UP-DOWN	TILT MAIN ROTOR BLADES IN DIRECTION OF APPLIED FORCE	✓ TACTILE	CONTROL POSITION
INDICATOR	SCALE RANGE	DISPLAYS ENGINE TORQUE VALUE	✓	INDICATOR READING
INDICATOR	SCALE RANGE	DISPLAYS PER CENT RPM	✓	INDICATOR READING
INDICATOR	SCALE RANGE	DISPLAYS ENGINE/ROTOR RPM	✓	INDICATOR READING
CYCLIC	FORWARD/LEFT/RIGHT	TILT MAIN ROTOR IN DIRECTION OF APPLIED FORCE (PITCH ATTITUDE)	✓ TACTILE	CONTROL POSITION
INDICATOR	SCALE RANGE	DISPLAYS A/C ATTITUDE	✓	INDICATOR READING
TIP PATH PLANE & HORIZON	SCALE RANGE	DISPLAYS A/C ATTITUDE	✓	INDICATOR READING
PEDALS	IN-OFF/LEFT/RIGHT	TILT AFT ROTOR BLADES IN DIRECTION OF APPLIED FORCE (TRIM)	✓ TACTILE	CONTROL POSITION
INDICATOR	SCALE RANGE	DISPLAY A/C HEADING	✓	INDICATOR READING
INDICATOR		DISPLAY A/C ATTITUDE	✓	INDICATOR READING
TIP PATH PLANE & HORIZON	SCALE RANGE	DISPLAYS A/C ATTITUDE	✓	TERRAIN
N/A	N/A	N/A	✓	TERRAIN/AIRSPACE CLEARANCE
INSTRUMENTS	IN/OUT TOLERANCE	DISPLAYS	✓	GAUGES

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
AMOUNT AND DIRECTION OF CONTROL MOVEMENT	1		MUST ADJUST CONTROLS WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C RESPONSE
IN TOLERANCE RANGE	1		MUST DETECT AND EVALUATE READINGS TO IDENTIFY POTENTIAL ENGINE/EQUIPMENT MALFUNCTIONS
IN TOLERANCE RANGE	1		
IN TOLERANCE RANGE	1		
AMOUNT AND DIRECTION OF CONTROL MOVEMENT	1		MUST ADJUST CONTROLS WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C RESPONSE
IN TOLERANCE RANGE	1		MUST DETECT AND EVALUATE READINGS TO IDENTIFY POTENTIAL ENGINE/EQUIPMENT MALFUNCTIONS
N/A	1		MUST DETECT AND EVALUATE TERRAIN FOR PROPER ATTITUDE
AMOUNT AND DIRECTION OF CONTROL MOVEMENT	1		MUST ADJUST CONTROLS WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C RESPONSE
IN TOLERANCE RANGE	1		MUST DETECT AND EVALUATE READINGS TO IDENTIFY POTENTIAL ENGINE/EQUIPMENT MALFUNCTIONS
IN TOLERANCE RANGE	1		
TERRAIN CLEARANCE	1		MUST DETECT AND EVALUATE TERRAIN FEATURES FOR POSSIBLE HAZARD TO A/C
TERRAIN/AIRSPACE CLEARANCE	1		



# TASK ANALYSIS

MISSION PHASE				SUBSYSTEM COMMUNICATIONS			
FUNCTION		ENGAGEMENT		PRE-ATTACK		STIMULUS	
VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION	CONTROL/DISPLAY		FEEDBACK	
				NAME	OPTIONS	NAME	OTHER
1. SELECT	RADIO		SWITCH TO SELECTED RADIO	SWITCH	FM, UHF; WHF	ENABLES SELECT RADIO	IC PANEL SWITCH POSITION
2. ADJUST	FREQUENCY	RADIO	TUNE TO DESIRED FREQUENCY	DIAL	FREQUENCY RANGE	ENABLES SELECT FREQUENCY	IC PANEL DIAL POSITION
3. TRANSMIT	REPORT	POSITION	SEND POSITION DATA TO S-3	MICROPHONE	N/A	TRANSMITS MESSAGE	SOP
4. RECEIVE	INSTRUCTIONS	SPECIAL	LISTEN TO INSTRUCTIONS	HEADSET	N/A	TRANSMITS MESSAGE	SOP
5. SELECT	RADIO		SWITCH TO SELECTED RADIO	SWITCH	FM, UHF; WHF	ENABLES SELECT RADIO	IC PANEL SWITCH POSITION
6. ADJUST	FREQUENCY	RADIO	TUNE TO DESIRED FREQUENCY	DIAL	FREQUENCY RANGE	ENABLES SELECT FREQUENCY	IC PANEL DIAL POSITION
7. TRANSMIT	CALL SIGN		IDENTIFY TO SUPPORTED UNIT	MICROPHONE	N/A	TRANSMITS MESSAGE	SOP
8. RECEIVE	INFORMATION	BRIEFING	GET THREAT BRIEFING, EXACT THREATS, POSITIONS, POSSIBLE AID AND AVOIDANCE ALEAS	HEADSET	N/A	TRANSMITS MESSAGE	SOP

SUBSYSTEM COMMUNICATIONS				PRE-ATTACK			
FUNCTION		ENGAGEMENT		PRE-ATTACK		STIMULUS	
VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION	CONTROL/DISPLAY		FEEDBACK	
				NAME	OPTIONS	NAME	OTHER
1. SELECT	RADIO		SWITCH TO SELECTED RADIO	SWITCH	FM, UHF; WHF	ENABLES SELECT RADIO	IC PANEL SWITCH POSITION
2. ADJUST	FREQUENCY	RADIO	TUNE TO DESIRED FREQUENCY	DIAL	FREQUENCY RANGE	ENABLES SELECT FREQUENCY	IC PANEL DIAL POSITION
3. TRANSMIT	REPORT	POSITION	SEND POSITION DATA TO S-3	MICROPHONE	N/A	TRANSMITS MESSAGE	SOP
4. RECEIVE	INSTRUCTIONS	SPECIAL	LISTEN TO INSTRUCTIONS	HEADSET	N/A	TRANSMITS MESSAGE	SOP
5. SELECT	RADIO		SWITCH TO SELECTED RADIO	SWITCH	FM, UHF; WHF	ENABLES SELECT RADIO	IC PANEL SWITCH POSITION
6. ADJUST	FREQUENCY	RADIO	TUNE TO DESIRED FREQUENCY	DIAL	FREQUENCY RANGE	ENABLES SELECT FREQUENCY	IC PANEL DIAL POSITION
7. TRANSMIT	CALL SIGN		IDENTIFY TO SUPPORTED UNIT	MICROPHONE	N/A	TRANSMITS MESSAGE	SOP
8. RECEIVE	INFORMATION	BRIEFING	GET THREAT BRIEFING, EXACT THREATS, POSITIONS, POSSIBLE AID AND AVOIDANCE ALEAS	HEADSET	N/A	TRANSMITS MESSAGE	SOP



# TASK ANALYSIS

MISSION PHASE: ENGAGEMENT  
FUNCTION: SURVIVAL ATTACK POSITION

SEGMENT: PRE-ATTACK  
SUBSYSTEM:

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. VERIFY	CHECKPOINT		OBSERVE MAP AND TERRAIN
2. ESTIMATE	TIME	ADP ARRIVAL	CORRELATE DISTANCE, AIRSPEED
3. MAINTAIN	WEEK		HOLD IN TERRAIN AT MINIMUM ALTITUDE
4. CHECK	INSTRUMENTS	AIRCRAFT	ASCERTAIN ALL SYSTEMS NORMAL

NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK M V A OTHER	STIMULUS INPUT
MAP	MAP SCALE	DISPLAY TERRAIN	0 ✓	MAP, TERRAIN FEATURES
INDICATOR, MAP	INDICATOR RANGE, MAP SCALE	DISPLAY AIRSPEED AND DISTANCE	0 ✓	INDICATOR POSITION, MAP
N/A	N/A	N/A	0 ✓	TERRAIN
INDICATORS	SCALE RANGES	DISPLAY AIRCRAFT STATUS	0 ✓	INDICATOR READINGS

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
MAP SCALE	1	ACCURATE TO SIX DIGIT COORDINATE	MUST DETECT AND IDENTIFY CHECKPOINT
INDICATOR SCALE RANGE, MAP SCALE	1		MUST DETECT AND INTERPRET INDICATOR READINGS AND MAP COORDINATES
N/A	1		MUST MAINTAIN MINIMUM CLEARANCE OVER OBSTACLES TO AVOID ASSET DETECTION
INDICATOR SCALE RANGES	1		MUST DETECT AND INTERPRET INDICATOR READINGS QUICKLY AND ACCURATELY

# TASK ANALYSIS

SEGMENT: PRE-ATTACK

SUBSYSTEM

MISSION PHASE: ENGAGEMENT  
FUNCTION: PERFORM HOVER CHECK/HOVER/LAND

TASK		OPERATOR ACTION		CONTROL		EQUIPMENT RESP		FEEDBACK		STIMULUS INPUT		OPERATION DECISION OPTIONS		CRIT RESP		ACCURACY REQUIRED		COMMENTS	
VERB	OBJECT	MODIFIER		NAME	OPTIONS	SCALE RANGE	DISPLAY RIM	M V A OTHER		INDICATOR CHECKLIST		IN TOLERANCE RANGE				64000 ± 50		MUST DETECT AND INTERPRET INDICATOR READINGS CORRECTLY.	
1. CHECK	RPM	N <sub>0</sub> AND N <sub>D</sub>	OBSERVE ENGINE RPM IN TOLERANCE	INDICATOR	SCALE RANGE 64000		DISPLAY RIM	D ✓		INDICATOR CHECKLIST		IN TOLERANCE RANGE						MUST DETECT AND INTERPRET INDICATOR READINGS CORRECTLY.	
2. CHECK	LIGHTS	CAUTION AND WARNING	OBSERVE ALL CAUTION/WARNING LIGHTS ARE OUT	INDICATOR	ON/OFF	ON/OFF	DISPLAY WARNING/CAUTION	D ✓		INDICATOR CHECKLIST		ON/OFF						MUST DETECT AND INTERPRET INDICATOR READINGS CORRECTLY.	
3. CHECK	INSTRUMENTS	ENGINE AND TRANS- MISSION	OBSERVE PRESSURE, TEMPERATURE, TORQUE INSTRUMENTS RECORD IN TOLERANCE	INDICATOR	SCALE RANGE	SCALE RANGE	DISPLAY PRESSURE, TEMPERATURE, TORQUE	D ✓		INDICATOR CHECKLIST		IN TOLERANCE RANGE						MUST DETECT AND INTERPRET INDICATOR READINGS CORRECTLY.	
4. CHECK	INDICATOR	FUEL	NOTE FUEL QUANTITY REMAINING	INDICATOR	SCALE RANGE	SCALE RANGE	DISPLAY FUEL QUANTITY	D ✓		INDICATOR CHECKLIST		IN TOLERANCE RANGE						MUST DETECT AND INTERPRET INDICATOR READINGS CORRECTLY.	
5. CHECK	SWITCH	FORCE TRIM	IN DESIRED POSITION (OFF)	SWITCH	ON/OFF	ON/OFF		D ✓	TACTILE	CHECKLIST, CONTROL POSITION		ON/OFF						NONE	
6. CHECK	SWITCH	ECU	IN DESIRED POSITION	SWITCH	ON/OFF	ON/OFF	CONDITION COCKPIT ENVIRONMENT	D ✓	TACTILE	CHECKLIST, CONTROL POSITION		ON/OFF						NONE	
7. CHECK	SYSTEM	POWER	OBSERVE ALL ENGINE/TRANSMISSION/ ROTOR PARAMETERS IN TOLERANCE	INDICATORS: TORQUE EGT RPM	SCALE RANGES	SCALE RANGES	DISPLAY ENGINE, TRANS- MISSION, ROTOR CONDI- TION	C ✓		INDICATOR CHECKLIST		IN TOLERANCE RANGE						MUST DETECT AND INTERPRET INDICATOR READINGS ACCURATELY.	
8. PERFORM	OPERATION	HOVER	HOVER THE AIRCRAFT	AIRCRAFT ALTITUDE CONTROLS	CONTROL RANGE	CONTROL RANGE	AIRCRAFT GOES INTO HOVER MODE	C ✓	TACTILE	INDICATORS, THERMAL, CONTROLS		CONTROL RANGE						MUST CONTROL ALTITUDE AND ALTITUDE D. AIRCRAFT AND PRESENT IMPACT WITH GROUND ON UNSTABLE	

# TASK ANALYSIS

MISSION PHASE: ENGAGEMENT			
FUNCTION: ACTIVATE WEAPONS SYSTEM			
VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. ACTIVATE	CIRCUIT BREAKER	WEAPONS SYSTEM	PUSH CIRCUIT BREAKER "IN"
2. ACTIVATE	SWITCH	MASTER ARM	SELECT SWITCH TO "ARM"
3. CHECK	LIGHT	ARM	OBSERVE ARM LIGHT ON PANEL
4. SELECT	SWITCH	WEAPONS SELECT	TURN SELECTOR SWITCH TO DESIRED WEAPONS SYSTEM
5. POSITION	SIGHT	WEAPONS	UNSTOW SIGHT AS REQUIRED
6. ACTIVATE	SWITCH	POWER	TURN POWER SWITCH "ON"
7. CHECK	RETICLE	SIGHT	OBSERVE LIGHT RETICLE IN SIGHT

SEGMENT: PRE-ATTACK		SUBSYSTEM	
NAME	CONTROL	EQUIPMENT RESP	FEEDBACK
CIRCUIT BREAKER "IN-OUT"	IN-OUT	ENABLES WEAPONS SYSTEM ELECTRICAL CIRCUITS	D / TACTILE
SWITCH, TOGGLE	SAFE, ARM, OFF	ENABLES WEAPON SYSTEM	D / TACTILE
LIGHT	ON/OFF		D / TACTILE
SWITCH, ROTARY	ON-BOARD WEAPON SYSTEMS	ENABLES SELECTED WEAPON SYSTEM	D / TACTILE
SIGHT	ADJUSTMENT RANGE	SIGHT MOVES TO ADJUSTED POSITION	D / TACTILE
SWITCH, TOGGLE	ON-OFF	ENABLE SIGHT POWER	D / TACTILE
RETICLE	ON/OFF		D / LIGHT

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
CIRCUIT BREAKER "IN-OUT"	1		MUST IDENTIFY AND SELECT THE CORRECT CONTROL POSITION TO ASSURE WEAPONS SYSTEM ACTIVATION
CONTROL SAFE, ARM, OFF	1		
CHECK ON/OFF	1		
CHOICE OF ON BOARD WEAPONS SYSTEM	1		MUST IDENTIFY AND SELECT THE CORRECT CONTROL POSITION TO ASSURE WEAPONS SYSTEM ACTIVATION
ADJUST TO COMFORT	1		
POWER ON-OFF	1		
LIGHT ON/OFF	1		THE ILLUMINATED RETICLE IS A CHECK THAT WEAPONS SYSTEM IS ACTIVATED

# TASK ANALYSIS

MISSION PHASE ENGAGEMENT  
FUNCTION VERIFY POSITION/ROUTE/CONFIRM ADP

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. CONFIRM	POSITION	AERIAL OBSERVATION	CORRELATE VISUAL CHECK OF ADP POSITION WITH THAT PLOTTED ON MAP AND ATTAIN FAMILIARITY WITH TERRAIN
2. VERIFY	ROUTE	ENTRY	CORRELATE VISUAL CHECK OF ROUTE OF ENTRY WITH THAT PLOTTED ON MAP
3. VERIFY	ROUTE	EXIT	CORRELATE VISUAL CHECK OF EXIT ROUTE WITH THAT PLOTTED ON MAP

SEGMENT PRE-ATTACK  
SUBSYSTEM

NAME	CONTROL	OPTIONS	EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
				D	V	A OTHER	
MAP	MAP SCALE	DISPLAYS TERRAIN	0 ✓				MAP, TERRAIN
MAP	MAP SCALE	DISPLAYS TERRAIN	0 ✓				MAP, TERRAIN
MAP	MAP SCALE	DISPLAYS TERRAIN	0 ✓				MAP, TERRAIN

OPERATOR DECISION/OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
MAP SCALE	1	ACCURATE TO SIX DIGIT COORDINATE	MUST CORRELATE VISUAL AND GRAPHIC DATA ACCURATELY
MAP SCALE	1	ACCURATE TO SIX DIGIT COORDINATE	MUST CORRELATE VISUAL AND GRAPHIC DATA ACCURATELY
MAP SCALE	1	ACCURATE TO SIX DIGIT COORDINATE	MUST CORRELATE VISUAL AND GRAPHIC DATA ACCURATELY



## TASK ANALYSIS

MISSION PHASE - ENGAGEMENT										SUBSYSTEM										
FUNCTION - MANUEVER INTO ACP										MANEUVERS										
TASK			OPERATOR ACTION			CONTROL / DISPLAY			EQUIPMENT RESP.			FEEDBACK			STIMULUS INPUT					
VERB	OBJECT	MODIFIER	VERB	OBJECT	MODIFIER	NAME	OPTIONS	DISPLAY	NAME	OPTIONS	DISPLAY	NAME	OPTIONS	DISPLAY	NAME	OPTIONS	DISPLAY			
1. MAINTAIN	COURSE	SELECTED	NAVIGATE ON COURSE SELECTED TO ACP			MAP	IMP SCALE	DISPLAY TERRAIN	D	✓		MAP	TERRAIN		MAP SCALE	1	MUST DETECT AND IDENTIFY FLIGHT PATH TO ACP			
2. MAINTAIN	MASK		ADJUST A/C FOR MINIMUM ALTITUDE OVER TERRAIN			N/A	N/A	N/A	C	✓			TERRAIN, A/C FLIGHT CONTROLS		N/A	1	MUST MAINTAIN A/C CONTROL AND ALTITUDE TO PREVENT IMPACT WITH OBSTACLES			
3. MONITOR	OBSTACLES	FLIGHT PATH	VISUALLY INSPECT AIRSPACE IN FLIGHT PATH			N/A	N/A	N/A	C	✓			TERRAIN		N/A	1	MUST DETECT AND IDENTIFY FLIGHT PATH OBSTACLES			
4. CHECK	WIND		OBSERVE WATER, TREES, WEATHER REPORT, FEEL			N/A	N/A	N/A	D	✓			TERRAIN		N/A	1	EXPERIENCE WILL AID IN CORRECT CALCULATION			
5. SELECT	PATH	APPROACH	DETERMINE APPROACH DIRECTION			N/A	N/A	N/A	D	✓			TERRAIN		N/A	1	MUST DETECT AND IDENTIFY FLIGHT PATH OBSTACLES			
6. SELECT	POINT	TERMINATION	DETERMINE HOVER SPOT			N/A	N/A	N/A	D	✓			TERRAIN		N/A	1				
7. EVALUATE	SIZE	HOVER POINT	ASCERTAIN HOVER CLEARANCE			N/A	N/A	N/A	D	✓			TERRAIN		N/A	1				
8. MAINTAIN	HOVER	STABLE	HOVER AIRCRAFT USING CYCLIC, PEDALS, COLLECTIVE			FLIGHT		DETERMINE AIRCRAFT POSITION/OPERATION	C	✓			AIRCRAFT POSITION AND ALTITUDE		ADJUST FLIGHT CONTROLS	1				

# TASK ANALYSIS

MISSION PHASE				ENGAGEMENT				SEGMENT				PRE-ATTACK			
FUNCTION				COMMUNICATION POSITION - ADP (SEE COMMUNICATION)				SUBSYSTEM							
VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION	CONTROL		EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT	OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS	
				NAME	OPTIONS		MANUAL	V	A						OTHER
1. SELECT	FM		SWITCH TO DESIRED RADIO	SWITCH	UMF, FM, WHF, INT	ENABLES SELECTED RADIO	D	✓	TACTILE	IC PANEL, SWITCH POSITION	UMF, WHF, FM, INT	1		MUST SELECT APPROPRIATE RADIO	
2. ACTIVATE	MICROPHONE		DEPRESS AND HOLD SWITCH	SWITCH	OPEN/CLOSED	ENABLES SELECT CHANNEL	D	✓	TACTILE	SWITCH	NORMAL OPEN/CLOSED	1			
3. TRANSMIT	REPORT	POSITION	SEND ADP REPORT	MICROPHONE	N/A	TRANSMITS MESSAGE	D	✓		SOP	MESSAGE CONTENT	1		NONE	
4. RELEASE	MICROPHONE														

# TASK ANALYSIS

SEGMENT PRE-ATTACK

MISSION PHASE ENGAGEMENT  
FUNCTION HOVER AND CHECK INTERFERENCES

TASK		OPERATOR ACTION		CONTROL		EQUIPMENT RESP		FEEDBACK		STIMULUS INPUT		OPERATOR DECISION OPTIONS		ACCURACY REQUIRED		COMMENTS	
VERB	OBJECT	MODIFIER		NAME	OPTIONS			✓	✓	✓	✓						
1. CHECK	AREA CLEAR		VERIFIES NO OBSTRUCTIONS IN A/C HOVER AREA	N/A	N/A	N/A		C	✓	CHECKLIST, AREA OBSTRUCTIONS		SUFFICIENT CLEARANCE FOR HOVER	2			MUST DETECT AND EVALUATE TERRAIN FEATURES THAT PRESENT A POTENTIAL HAZARD TO HOVER	
2. SELECT	CONTROL	CYCLIC	POSITION CYCLIC TO NEUTRAL	CYCLIC	FORWARD/LEFT/RIGHT	ADJUSTS MAIN ROTOR ATTITUDE IN DIRECTION OF APPLIED FORCE (LEVEL)		D	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO ACHIEVE NEUTRAL POSITION	1			MUST MAINTAIN CONTROL WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C ATTITUDE	
3. POSITION	CONTROL	COLLECTIVE	INCREASE COLLECTIVE	COLLECTIVE	UP-DOWN	ADJUSTS MAIN ROTOR BLADE ANGLE IN DIRECTION OF APPLIED FORCE (LEVEL)		C	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO ACHIEVE LIFT MOVEMENT	1			MUST MAINTAIN CONTROL WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C ATTITUDE	
4. POSITION	PEDALS	ANTI-TORQUE	MAINTAIN HEADING	ANTI-TORQUE PEDALS	IN-OUT	ADJUSTS AIT ROTOR BLADES IN DIRECTION OF APPLIED FORCE		C	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO ACHIEVE A/C HEADING	1				
5. ADJUST	CONTROL	CYCLIC	STABILIZE AIRCRAFT	CYCLIC	FORWARD/LEFT/RIGHT	ADJUSTS MAIN ROTOR ATTITUDE IN DIRECTION OF APPLIED FORCE		C	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO STABILIZE A/C	1	3 FT. ± 1			
6. ADJUST	CONTROL	COLLECTIVE	STABILIZE AIRCRAFT	COLLECTIVE	UP-DOWN	ADJUSTS MAIN ROTOR BLADE ANGLE IN DIRECTION OF APPLIED FORCE (LEVEL)		C	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO STABILIZE A/C	1	3 FT. ± 1			
7. MAINTAIN	HEADING	AIRCRAFT	STABILIZE AIRCRAFT	ANTI-TORQUE PEDALS	IN-OUT	ADJUSTS AIT ROTOR BLADES IN DIRECTION OF APPLIED FORCE		C	✓	TACTILE	CONTROL POSITION A/C ATTITUDE	CONTROL MOVEMENT TO STABILIZE A/C	1	± 5°			
8. MONITOR	TEMPERATURES	ENGINE	VERIFY TEMPERATURE IN TOLERANCE	INDICATORS	SCALE RANGE	DISPLAYS TEMPERATURE VALUES		C	✓		INDICATOR DISPLAY VALUES	TEMPERATURE IN TOLERANCE	1			MUST DETECT AND EVALUATE INDICATOR READINGS ACCORDING TO DETERMINE POSSIBLE ENGINE MALFUNCTION	
9. MONITOR	TEMPERATURES	TRANSMISSION	VERIFY TEMPERATURE IN TOLERANCE	INDICATORS	SCALE RANGE	DISPLAYS TEMPERATURE VALUES		C	✓		INDICATOR DISPLAY VALUES	TEMPERATURE IN TOLERANCE	1			MUST DETECT AND EVALUATE INDICATOR READINGS ACCORDING TO DETERMINE POSSIBLE ENGINE MALFUNCTION	
10. MONITOR	PRESSURE	TRANSMISSION	VERIFY PRESSURE IN TOLERANCE	INDICATORS	SCALE RANGE	DISPLAYS PRESSURE VALUES		C	✓		INDICATOR DISPLAY VALUES	PRESSURE IN TOLERANCE	1				
11. MONITOR	PRESSURE	ENGINE	VERIFY PRESSURE IN TOLERANCE	INDICATORS	SCALE RANGE	DISPLAYS PRESSURE VALUES		C	✓		INDICATOR DISPLAY VALUES	PRESSURE IN TOLERANCE	1				
12. MONITOR	TORQUE	ENGINE	VERIFY TORQUE IN TOLERANCE	INDICATORS	SCALE RANGE	DISPLAYS TORQUE VALUES		C	✓		INDICATOR DISPLAY VALUES	TORQUE IN TOLERANCE	1				
13. OBSERVE	INSTRUCTIONS	GROUND GUIDE	ADJUST A/C ATTITUDE IN ACCORDANCE WITH GUIDE'S INSTRUCTIONS	N/A	N/A	N/A		C	✓		GROUND GUIDE	N/A	1			MUST DETECT INTERFERING SIGNALS AND INTERPRET CORRECTLY TO AVOID POSSIBLE DAMAGE TO A/C	

# TASK ANALYSIS

MISSION PHASE ENGAGEMENT - TROOP SUPPORT  
FUNCTION FREEDOM VISUAL OBSERVATION (GROUND)

SEGMENT PRE-ATTACK  
SUBSYSTEM

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. SELECT	AREA	SEARCH	DETERMINE LIMITS OF THE RECONNOIRED SECTOR
2. SCAN	AREA	SEARCH	VISUALLY OBSERVE SELECTED AREA FOR DATA GATHERING
3. OBTAIN	INFORMATION	APPROPRIATE	NOTES THAT INFORMATION APPLICABLE TO MISSION
4. MAINTAIN	ORIENTATION	DIRECTIONAL	OBSERVER AND PILOT MUST ALWAYS BE AWARE OF THEIR ORIENTATION AND POSITION IN RESPECT TO THE GROUND LOCUS
5. DETECT	ACTIVITY	ENEMY	OBSERVES MOVEMENT OR OBJECTS OF ENEMY
6. MAINTAIN	CONTACT	ENEMY	CONTINUE OBSERVATION
7. AVOID	DETECTION	ENEMY	REMAIN WITHIN COVER AND CONCEALMENT THAT IS AVAILABLE
8. PROVIDE	WARNING		COMMUNICATE: REPORT ENEMY LOCATION, SIZE, ACTIVITY TO SUPPORTED UNIT
9. PROVIDE	SPACE	MANEUVER	MANEUVER AIRCRAFT FAR ENOUGH AWAY FROM HOSTILE AREA TO PROVIDE ROOM FOR THEIR MANEUVER ACTIONS

NAME	CONTROL	EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
			NO	YES	OTHER	
N/A	N/A	N/A	D	/		TERRAIN
N/A	N/A	N/A	D	/		TERRAIN (OPORD)
N/A	N/A	N/A	D	/		TERRAIN MOVEMENT TABLES
N/A	N/A	N/A	C	/		TERRAIN FEATURES RECOGNITION OF SPECIFIC LOCATIONS TANGLER TRAVELLED
N/A	N/A	N/A	D	/		RADIO COMM
N/A	N/A	N/A	C	/		
N/A	N/A	N/A	/	/		TERRAIN VEGETATION
RADIO	UHF, VHF, FM	TRANSMITS MESSAGE	D	/		SOP

OPERATION DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
SIZE OF SECTOR	1		
N/A	1		
N/A	1		THE INFORMATION NOTED BY THE OBSERVER WILL BE USED TO DETERMINE THE RECENT CHANGES, b) "BALLS, STREAMS," c) HEAVY VEGETATION, d) MOVEMENT
	1		
	1		
MESSAGE CONTENT	1		
			REMAIN CLOSE ENOUGH TO PROVIDE PERTINENT DATA



# TASK ANALYSIS

MISSION PHASE: ENVIRONMENT  
FUNCTION: RECEIVE "TARGET" DATA (SEE COMMUNICATIONS)

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. SELECT	RADIO		SWITCH ON RADIO DESIRED
2. ADJUST	FREQUENCY	RADIO	TUNE IN PROPER FREQUENCY
3. RECEIVE	DATA	TARGET	RECEIVES TARGET DISTANCE, DIRECTION, GRID COORDINATES, REFERENCE POINT
4. PLOT	DATA	TARGET	PLOT AND LOCATE TARGET ON MAP
5. DETERMINE	AREA	TARGET	GENERALLY ORIENT TOWARD TARGET LOCATION

SEGMENT: "PILOT" ACTIVATION  
SUBSYSTEM: COMMUNICATION

NAME	CONTROL	OPTIONS	EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
				YES	NO	OTHER	
SWITCH		UHF, VHF, FM	ENABLES SELECT RADIO	D		TACTILE	IC PANEL, CONTROL POSITION
DIAL		FREQUENCY RANGE	ENABLES SELECT FREQUENCY	D			IC PANEL, FREQUENCY DIAL
HEADSET		N/A	TRANSMITS MESSAGE	D			SOP (VOICE)
MAP		SCALE RANGE	DISPLAYS TERRAIN	D		TACTILE	TARGET DATA
MAP AIRCRAFT				D			TARGET DATA

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
UHF, VHF, FM	1		MUST SELECT APPROPRIATE RADIO
FREQUENCY RANGE	1		MUST TUNE IN CORRECT FREQUENCY
N/A	1		MUST UNDERSTAND AND CORRECTLY INTERPRET DATA
N/A	1	ACCURATE TO SIX DIGIT COORDINATE	MUST DEFECT (PLOT) TARGET ACCURATELY

## TASK ANALYSIS

MISSION PHASE      ENGAGEMENT

SUBSYSTEM

TARGET      SUBSTATION

TASK		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	
1. ADJUST	CONTROL	COLLECTIVE	INCREASE POWER TO GAIN ALTITUDE
2. ADJUST	PEDALS	AFT ROTOR	MAINTAIN HEADING CONTROL
3. ADJUST	ATTITUDE	AIRCRAFT	POSITION AIRCRAFT SO OBSERVER CAN VISUALLY SCAN TARGET AREA
4. MAINTAIN	CLEARANCE	OBSTACLE	CONTROL AIRCRAFT MOVEMENT
5. PERFORM	MANEUVER	POP-UP	RAISE AIRCRAFT TO TARGET OBSERVATION HEIGHT

CONTROL		EQUIPMENT RESP		FEEDBACK				STIMULUS INPUT	
NAME	OPTIONS			MAN	VIS	A	OTHER		
COLLECTIVE	INCREASE / DECREASE	ADJUSTS ENGINE POWER IN DIRECTION OF CONTROL MOVEMENT	C	✓			TACTILE	ENGINE INDICATORS, CONTROL POSITION	
PEDALS	LEFT/RIGHT, IN/OUT	ADJUSTS TAIL ROTOR TO MAINTAIN HEADING	C	✓			TACTILE	-	
CYCLIC	LEFT/RIGHT FORWARD/AFT	ADJUSTS CYCLIC	C	✓			TACTILE	-	
AIRCRAFT CONTROLS	CONTROL RANGE	AIRCRAFT ATTITUDE, ALTITUDE, HEADING AND AIRSPEED AS INPUT	C	✓				-	
AIRCRAFT CONTROLS	CONTROL RANGE	AIRCRAFT ATTITUDE, ALTITUDE, HEADING AND AIRSPEED AS INPUT	C	✓				-	

OPERATOR DECISION OPTIONS	DELT RESP	ACCURACY REQUIRED	COMMENTS
AMOUNT OF INCREASE	1		MUST ADJUST TO SUFFICIENT VALUE TO ACHIEVE RAPID LIFT
DEGREE, DIRECTION AND SPECIFIC PEDAL ACTUATION	1		MUST ADJUST TO MAINTAIN CONTROL AND HEADING OF AIRCRAFT
DEGREE, DIRECTION AND SPECIFIC PEDAL ACTUATION	1		-
CONTROL RANGE	1		-
CONTROL RANGE	1		-

## TASK ANALYSIS-

[illegible]

# TASK ANALYSIS

SEGMENT TARGET ACQUISITION

SUBSYSTEM

MISSION PHASE ENGAGEMENT  
FUNCTION TASK MANUEVER

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION	CONTROL		EQUIPMENT RESP	FEEDBACK		STIMULUS INPUT	OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
				NAME	OPTIONS		V	A	OTHER				
1. CHECK	TACH	DUEL	OBSERVE IN TOLERANCE	INDICATOR	SCALE RANGE	DISPLAYS RPM	C	✓	INDICATOR DISPLAY	IN TOLERANCE CONDITION	1	6600 ± 50	MUST DETECT AND EVALUATE SYSTEM CONDITION CORRECTLY
2. CHECK	LIGHTS	CAUTION/WARNING	OBSERVE CAUTION/WARNING LIGHTS OFF	INDICATOR	ON/OFF	DISPLAYS CAUTION/WARNING CONDITION	C	✓	INDICATOR DISPLAY	LIGHTS ON/OFF	1		
3. CHECK	INSTRUMENTS	ENGINE	OBSERVE IN TOLERANCE	INDICATOR	SCALE RANGE	DISPLAYS A/C CONDITION PARAMETERS	C	✓	INDICATOR DISPLAY	IN TOLERANCE CONDITION	1	IN TOLERANCE	
4. CHECK	FUEL	QUANTITY	NOTE REMAINING FUEL	INDICATOR	SCALE RANGE	DISPLAYS FUEL QUANTITY	C	✓	INDICATOR DISPLAY	IN TOLERANCE CONDITION	1		
5. CHECK	SWITCH	FORCE TRIM	IN DESIRED POSITION	SWITCH	ON/OFF	ENABLES FORCE TRIM	C	✓	TACTILE	CONTROL ON/OFF	1		
6. CHECK	SWITCH	ECU	IN DESIRED POSITION	SWITCH	ON/OFF	ENABLES ECU	C	✓	TACTILE	CONTROL ON/OFF	1		
7. CHECK	INDICATORS	POWER (TORQUE)	OBSERVE IN TOLERANCE	INDICATORS	SCALE RANGE	DISPLAYS SYSTEM CONDITION	C	✓	INDICATOR DISPLAY	IN TOLERANCE CONDITION	1	0 - 50	
8. CHECK	CLEARANCE	OBSTACLE	OBSERVE CLEAR AREA FOR DROP	N/A	N/A	N/A	C	✓	TERRAIN	CLEAR/OBSTACLES	1		MUST DETECT AND EVALUATE TERRAIN FOR OBSTACLES TO CLEAR DROP
9. ADJUST	LEVER	COLLECTIVE	INCREASE/DECREASE COLLECTIVE AS REQUIRED TO MAINTAIN AIRCRAFT DEFILATE POSITION	FLIGHT CONTROL	CONTROL RANGE	A/C REACTS TO CONTROL MOVEMENT	C	✓	INDICATORS, CONTROL POSITION	RANGE OF CONTROL MOVEMENT	1		MUST CONTROL AIRCRAFT TO ACHIEVE DEFILATE POSITION
10. ADJUST	LEVER	CYCLIC	ADJUST CYCLIC AS ABOVE	FLIGHT CONTROL			C	✓	TACTILE	RANGE OF CONTROL MOVEMENT	1		
11. ADJUST	PEDALS	ANTI-TORQUE	MAINTAIN TRIM	FLIGHT CONTROL			C	✓	TACTILE	RANGE OF CONTROL MOVEMENT	1		



# TASK ANALYSIS

MISSION PHASE ENGAGEMENT  
FUNCTION ATTACK TARGET

SEGMENT WEAPONS DELIVERY  
SUBSYSTEM SECTIONS

VERB	TASK OBJECT	OPERATOR ACTION	
		MODIFIER	
1. ACQUIRE	TARGET		ACQUIRE AND TRACK TARGET WITH WEAPON TRACKING SYSTEM
2. SELECT	ARMAMENT		ACQUIRE WEAPON SYSTEM SELECTED FOR TARGET
3. TRACK	TARGET		TRACK TARGET WITH WEAPON TRACKING SYSTEM
4. FIRE	ARMAMENT		FIRE SELECTED WEAPON AT TARGET
5. TRACK	WEAPON		MONITOR WEAPON FLIGHT TO TARGET
6. ADJUST	FLIGHT PATH	WEAPON	INPUT FLIGHT PATH CORRECTIONS TO WEAPON IF NEEDED AND IF POSSIBLE
7. OBSERVE	IMPACT	WEAPON	NOTE HIT OR MISS
8. ASSESS	DAMAGE	TARGET	EVALUATE TARGET DAMAGE
9. REPORT	DAMAGE	TARGET	TRANSMIT TARGET DAMAGE ASSESSMENT

NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
			YES	NO	OTHER	
SIGHT			D ✓			SIGHT, TARGET
WEAPONS CONTROL PANEL		SELECT WEAPON	D ✓		TACTILE	CONTROL PANEL, CHECKLIST
SIGHT			D ✓			SIGHT
TRIGGER			D ✓		TACTILE	TRIGGER
SIGHT			D ✓			SIGHT
SIGHT			D ✓		TACTILE	FLIGHT PATH OF WEAPON
SIGHT			D ✓			TARGET
N/A			D ✓			TARGET
RADIO			D ✓			SOP

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
TARGET TYPE	1		
WEAPONS TYPE	1		
	1		
	1		
ON TARGET/OFF TARGET	1		
HIT/MISS	1		
DESTROYED/DAMAGED/ MISSED	1		
	1		

## TASK ANALYSIS

MISSION PHASE - ENGAGEMENT			
FUNCTION - MODIFIER			
VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. CHECK	AREA CLEAR		VERIFIES NO OBSTRUCTIONS IN A/C UNDER AREA
2. SELECT	CONTROL	CYCLIC	POSITION CYCLIC TO NEUTRAL
3. POSITION	CONTROL	COLLECTIVE	INCREASE COLLECTIVE
4. POSITION	PEDALS	ANTI-TORQUE	MAINTAIN HEADING
5. MONITOR	TEMPERATURES	ENGINE	VERIFY TEMPERATURE IN TOLERANCE
6. MONITOR	TEMPERATURES	TRANSMISSION	VERIFY TEMPERATURE IN TOLERANCE
7. MONITOR	PRESSURE	TRANSMISSION	VERIFY PRESSURE IN TOLERANCE
8. MONITOR	PRESSURE	ENGINE	VERIFY PRESSURE IN TOLERANCE
9. MONITOR	TORQUE	ENGINE	VERIFY TORQUE IN TOLERANCE
10. ACQUIRE	TARGET		ACQUIRE AND TRACK TARGET WITH WEAPON TRACKING SYSTEM
11. SELECT	ARMAMENT		ACTIVATE WEAPON SYSTEM SELECTED FOR TARGET
12. TRACK	TARGET		TRACK TARGET WITH WEAPON TRACK- SYSTEM
13. FIRE	ARMAMENT		FIRE SELECTED WEAPON AT TARGET
14. TRACK	WEAPON		MONITOR WEAPON FLIGHT TO TARGET
15. ADJUST	FLIGHT PATH	WEAPON	WIND UP/DOWN CORRECTIONS TO WEAPON IF NEEDED AND IF POSSIBLE
16. OBSERVE	TARGET	WEAPON	NOTE HIT OR MISS

CONTROL		EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
NAME	OPTIONS			
N/A	N/A	N/A	C ✓	CHEMICALIST, AREA OBSERVATIONS
CYCCLIC	FORWARD, LEFT/RIGHT	ADJUSTS MAIN MOTOR ATTITUDE IN DIRECTION OF APPLIED FORCE (LEVEL)	TACTILE ✓	CONTROL POSITION A/C ATTITUDE
COLLECTIVE	UP-DOWN	ADJUSTS MAIN MOTOR BLADE POSITION IN DIRECTION OF APPLIED FORCE (LEVEL)	TACTILE ✓	CONTROL POSITION A/C ATTITUDE
ANTI-TORQUE PEDALS	IN-OUT	ADJUSTS AFT MOTOR PEDALS IN DIRECTION OF APPLIED FORCE	TACTILE ✓	CONTROL POSITION A/C ATTITUDE
INDICATORS	SCALE RANGE	DISPLAYS TEMPERATURE VALUES	C ✓	INDICATOR DISPLAY
INDICATORS	SCALE RANGE	DISPLAYS TEMPERATURE VALUES	C ✓	INDICATOR DISPLAY
INDICATORS	SCALE RANGE	DISPLAYS PRESSURE VALUES	C ✓	INDICATOR DISPLAY
INDICATORS	SCALE RANGE	DISPLAYS PRESSURE VALUES	C ✓	INDICATOR DISPLAY
INDICATORS	SCALE RANGE	DISPLAYS TORQUE VALUES	C ✓	INDICATOR DISPLAY
SIGHT			D ✓	SIGHT, TARGET
WEAPONS CONTROL PANEL		SELECT WEAPON	D ✓	CONTROL PANEL
SIGHT			D ✓	SIGHT
TRIGGER			D ✓	TRIGGER
SIGHT			D ✓	SIGHT
SIGHT			D ✓	CONTROL PANEL OF WEAPON
SIGHT			D ✓	TARGET

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
SUFFICIENT CLEARANCE FOR POWER	2		MUST DETECT AND EVALUATE "TARGET FEATURES" THAT PRESENT A POTENTIAL HAZARD TO POWER
CONTROL MOVEMENT TO ACHIEVE NEUTRAL POSI- TION	1		MUST MANIPULATE CONTROL WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C ATTITUDE
CONTROL MOVEMENT TO ACHIEVE LIFT MINIMUM	1		MUST MANIPULATE CONTROL WITH SUFFICIENT PRECISION TO ACHIEVE REQUIRED A/C ATTITUDE
CONTROL MOVEMENT TO ACHIEVE A/C HEADING	1		
TEMPERATURE IN TOL- ERANCE	1		MUST DETECT AND EVALUATE INDICATOR READINGS ACCURATELY TO DETERMINE POSSIBLE ENGINE MALFUNCTION
TEMPERATURE IN TOL- ERANCE	1		
PRESSURE IN TOLERANCE	1		
PRESSURE IN TOLERANCE	1		
TORQUE IN TOLERANCE	1		
TARGET TYPE			
WEAPONS TYPE			
ON TARGET/OFF TARGET			
HIT/MISS			

Continued on next page

# TASK ANALYSIS

MISSION PHASE ENGAGEMENT  
FUNCTION INTERLISE

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SEGMENT WEAPONS DELIVERY

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VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
17. ASSESS	DAMAGE	TARGET	EVALUATE TARGET DAMAGE
18. REPORT	DAMAGE	TARGET	TRANSMIT TARGET DAMAGE ASSESSMENT

NAME	CONTROL	EQUIPMENT RESP.	FEEDBACK			STIMULUS INPUT
			✓	✓	✓	
N/A	OPTIONS		0	✓		TARGET
RADIO	UHF, VHF, FM	TRANSMITS MESSAGE	0	✓		SOP

OPERATOR DECISION OPTIONS	ENV RESP	ACCURACY REQUIRED	COMMENTS
DESTROYED/DAMAGED/MISSED			

# TASK ANALYSIS

MISSION PHASE: ENGAGEMENT  
FUNCTION: SENSING FIRE

Page 1 of 2

VERB	TASK	MODIFIER	OPERATOR ACTION
1. ADJUST	LEVER	CYCLIC	ADJUST CYCLIC CONTROL AS REQUIRED TO MAINTAIN PITCH ATTITUDE FOR DESIRED AIRSPEED AND VISIBILITY
2. ADJUST	LEVER	COLLECTIVE	ADJUST COLLECTIVE PITCH TO MAINTAIN PITCH ATTITUDE AS REQUIRED BY TERRAIN, TERRAIN AND ENEMY SITUATION
3. ADJUST	PEDALS	ANTI-TORQUE	ADJUST PEDALS AS REQUIRED FOR YAW AND HEADING CONTROL
4. MAINTAIN	CLEARANCE	OBSTACLE	ADJUST FLIGHT CONTROLS AND MONITOR AREA AS REQUIRED TO MAINTAIN SUFFICIENT CLEARANCE
5. MONITOR	INSTRUMENTS	FLIGHT, ENGINE	OBSERVE INSTRUMENTS AS TIME PERMITS
6. DETERMINE	POINT	BRAKE OFF	DETERMINE A POINT AT WHICH AIRCRAFT MANEUVER (BREAK AWAY OR MASK) MUST BEGIN
7. ACQUIRE	TARGET		ACQUIRE AND TRACK TARGET WITH WEAPON TRACKING SYSTEM
8. SELECT	ARMAMENT		ACTIVATE WEAPON SYSTEM SELECTED FOR TARGET

SEGMENT: WEAPONS DELIVERY  
SUBSYSTEM

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CONTROL		EQUIPMENT RESP		FEEDBACK		STIMULUS INPUT
NAME	OPTIONS	CHANGE AIRCRAFT HEADING AND PITCH ATTITUDE	CHANGE TORQUE	FACTILE	OTHER	
FLIGHT	LEFT/RIGHT FORW/ART	✓	✓	✓	✓	CONTROL POSITION
FLIGHT	UP/DOWN	✓	✓	✓	✓	CONTROL POSITION
FLIGHT	LEFT/RIGHT	✓	✓	✓	✓	CONTROL POSITION
FLIGHT	AMOUNT OF ADJUSTMENT	✓	✓	✓	✓	OBSTACLES
INSTRUMENTS	IN/OUT OF TOLERANCE	✓	✓	✓	✓	GAUGES
N/A	N/A	✓	✓	✓	✓	TERRAIN TARGET
SIGHT		✓	✓	✓	✓	SIGHT, TARGET
WEAPONS CONTROL PANEL		✓	✓	✓	✓	CONTIN. PANEL CHECKLIST

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OPERATOR DECISION OPTIONS	DELT RESP	ACCURACY REQUIRED	COMMENTS
LEFT/RIGHT, FORW/ART	2		
UP/DOWN	2		
LEFT/RIGHT	2		
	2		
IN TOLERANCE	2		
	2		
TARGET TYPE	2		
WEAPONS TYPE	2		

Continued on next page



### TASK ANALYSIS

MISSION PHASE ENGAGEMENT				
FUNCTION RUNTIME TIME				
Page 2 of 2				
TASK				
VERB	OBJECT	MODIFIER	OPERATOR ACTION	
9. TRACK	TARGET		TRACK TARGET WITH NEWTON TRACKING SYSTEM	
10. FIRE	ARMAMENT		FIRE SELECTED WEAPON AT TARGET	
11. TRACK	WEAPON		MONITOR WEAPON FLIGHT TO TARGET	
12. ADJUST	FLIGHT PATH	WEAPON	INPUT FLIGHT PATH CORRECTIONS POSITION IF NEEDED AND IF POSSIBLE	
13. OBSERVE	IMPACT	WEAPON	NOTE HIT OR MISS	
14. ASSESS	DAMAGE	TARGET	EVALUATE TARGET DAMAGE	
15. REPORT	DAMAGE	TARGET	TRANSMIT TARGET DAMAGE ASSESSMENT	

SEGMENT WEAPONS DUTY

PAGE 2 OF 2

SUBSYSTEM

CONTROL		EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
NAME	OPTIONS		V	A	OTHER	
SIGHT		FIRE WAPON	D ✓			SIGHT
TRIGGER			D ✓	TACTILE		TRIGGER
SIGHT		AIMS WAPON	D ✓			SIGHT
SIGHT			D ✓	TACTILE		FLIGHT PATH OF WEAPON
SIGHT			D ✓			TARGET
V/A			D ✓			TARGET
RADIO		TRANSMIT MESSAGE	D ✓			SOP

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
	2		
	2		
	2		
ON/OFF TARGET	2		
HIT/MISS	2		
DESTROYED/DAMAGED/ MISSED	2		
	2		

# TASK ANALYSIS

MISSION PHASE ENGAGEMENT  
FUNCTION WSK MANEUVER

SEGMENT WEAPON DELIVERY  
SUBSYSTEM AIRCRAFT

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. CHECK	TACH	DEEL	OBSERVE IN TOLERANCE
2. CHECK	LIGHTS	CAUTION/WARNING	OBSERVE CAUTION/WARNING LIGHTS OFF
3. CHECK	INSTRUMENTS	ENGINE	OBSERVE IN TOLERANCE
4. CHECK	FUEL	QUANTITY	NOTE REMAINING FUEL
5. CHECK	SWITCH	FORCE TRIM	IN DESIRED POSITION
6. CHECK	SWITCH	ECU	IN DESIRED POSITION
7. CHECK	INDICATORS	POWER (TORQUE)	OBSERVE IN TOLERANCE
8. CHECK	CLEARANCE	OBSTACLE	PRESERVE CLEAR AREA FOR DROP
9. ADJUST	LEVER	COLLECTIVE	INCREASE/DECREASE COLLECTIVE AS REQUIRED TO MAINTAIN AIRCRAFT IN DEFILATE POSITION
10. ADJUST	LEVER	CYCLIC	ADJUST CYCLIC AS REQUIRED TO MAINTAIN IN DEFILATE POSITION
11. ADJUST	PEDALES	ANTI-TORQUE	MAINTAIN TRIM

NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK V I A OTHER	STIMULUS INPUT
INDICATOR	SCALE RANGE	DISPLAYS RPM	C ✓	INDICATOR DISPLAY
INDICATOR	ON/OFF	DISPLAYS CAUTION/WARNING CONDITION	C ✓	INDICATOR DISPLAY
INDICATOR	SCALE RANGE	DISPLAYS A/C CONDITION PARAMETERS	C ✓	INDICATOR DISPLAY
INDICATOR	SCALE RANGE	DISPLAYS FUEL QUANTITY	D ✓	INDICATOR DISPLAY
SWITCH	ON/OFF	ENABLES FORCE TRIM	C ✓	CONTROL POSITION
SWITCH	ON/OFF	ENABLES ECU	C ✓	CONTROL POSITION
INDICATORS	SCALE RANGE	DISPLAYS SYSTEM CONDITION	C ✓	INDICATOR DISPLAY
N/A	N/A	N/A	C ✓	TERRAIN
FLIGHT CONTROLS	CONTROL RANGE	A/C REACTS TO CONTROL MOVEMENTS	C ✓	INDICATORS: CLIMB/DESCEND TERRAIN POSITION
FLIGHT CONTROLS	CONTROL RANGE	A/C REACTS TO CONTROL MOVEMENTS	C ✓	INDICATORS: CLIMB/DESCEND TERRAIN POSITION
FLIGHT CONTROLS	CONTROL RANGE	A/C REACTS TO CONTROL MOVEMENTS	C ✓	INDICATORS: CLIMB/DESCEND TERRAIN POSITION

OPERATOR DECISION OPTIONS	CHIT RESP	ACCURACY REQUIRED	COMMENTS
IN TOLERANCE CONDITION	1	16000 ± 50	MUST DETECT AND EVALUATE SYSTEM CONDITION CORRECTLY
LIGHTS ON/OFF	1		
IN TOLERANCE CONDITION	1	IN TOLERANCE	
IN TOLERANCE CONDITION	1		
CONTROL ON/OFF	1		
CONTROL ON/OFF	1		
IN TOLERANCE CONDITION	1	0 ± 50	
CLEAR/OBSTACLES	1		MUST DETECT AND EVALUATE TERRAIN FOR OBSTACLES TO CLEAR DROP
RANGE OF CONTROL MOVEMENT	1		MUST CONTROL A/C TO ACQUIRE A DEFILATE POSITION
RANGE OF CONTROL MOVEMENT	1		
RANGE OF CONTROL MOVEMENT	1		

# TASK ANALYSIS

MISSION PHASE ENGAGEMENT  
FUNCTION RECEIVE ENEMY DETECTION

SEGMENT ENEMY DETECTION  
SUBSYSTEM

TASK	OPERATOR ACTION	
	OBJECT	MODIFIER
1. OBSERVE	MUZZLE FLASH	SEES MUZZLE FLASH FROM TARGET AREA
2. EVALUATE	THREAT	DETERMINE ENEMY ACTION IS AGAINST OWN AIRCRAFT
3. DETERMINE	MANEUVER	EVASIVE

NAME	CONTROL	EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
			NO	YES	OTHER	
N/A	N/A	N/A	D	✓		MUZZLE FLASH
N/A	N/A	N/A	D	✓		TARGET
N/A	N/A	N/A	D	✓		TARGET, TERRAIN, A/C MODE

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
N/A	1		MUST DETECT AND IDENTIFY THREAT
THREAT/NO THREAT	1		MUST CORRECTLY EVALUATE THREAT
EVASIVE DASH OR DROP	1		MUST CORRECTLY EVALUATE OPTION(S)

# TASK ANALYSIS

MISSION PHASE: ENGAGEMENT  
FUNCTION: RECEIVE HIT/ASSESS DAMAGE

VERB	TASK OBJECT	MODIFIER	OPERATION ACTION
1. OBSERVE	FLASH	MUZZLE	OBSERVE FLASH FROM ENEMY WEAPONS
2. DETERMINE	HIT	AIRCRAFT	HEARS, FEELS IMPACT OF ENEMY WEAPONS ON AIRCRAFT FUSelage
3. ASSESS	DAMAGE	AIRCRAFT	CHECK FLIGHT CONTROLS CHECK ENGINE INSTRUMENTS CHECK FLIGHT INSTRUMENTS
4. DETERMINE	SEVERITY	DAMAGE	EVALUATE OBSERVATIONS OF STEP 3
5. DETERMINE	ABORTWORTHINESS	AIRCRAFT	DETERMINE NEXT ACTION, I.E. LAND, RETURN TO BASE, ETC.

SEGMENT: WEAPONS DELIVERY  
SUBSYSTEM

NAME	CONTROL/DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK VIA OTHER	STIMULUS INPUT
N/A	N/A	N/A	0 ✓	FLASH, SMOKE
N/A	N/A	N/A	0 ✓	NOISE, AIRCRAFT JOLT, FLASH
FLIGHT CONTROLS INSTRUMENTS	DISPLAY, CONTROL RANGE	AIRCRAFT FLIGHT ATTITUDE DISPLAYS STATUS	0 ✓	INSTRUMENT DISPLAY CONTROL RESPONSE
N/A	N/A	N/A	0 ✓	AIRCRAFT AIR-CHART SCAIN CONDITION
N/A	N/A	N/A	0 ✓	NOISE CONTROL VIBRATIONS

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
EXTENT OF DAMAGE TO A/C	1		MOST DIRECT AND EVALUATE THREAT TO AIRCRAFT AND/OR MISSION OBJECTS AND ACCURATELY
HOW SERIOUS IS THREAT TO AIRCRAFT	1		
AIRCRAFT OPERATION IN TOLERANCE	1		PILOT MUST IMMEDIATELY RECOGNIZE THE THREAT TO AIRCRAFT AND TAKE IMMEDIATE ACTION TO CHECK ALL INSTRUMENTS AND FEELING IN FLIGHT CONTROLS TO DETERMINE IF AIRCRAFT WILL MAINTAIN FLIGHT
AIRCRAFT OPERATION IN TOLERANCE	1		
AIRCRAFT OPERATION IN TOLERANCE	1		1. MINOR DAMAGE - AIRCRAFT MANOVES AS IF NO DAMAGE OCCURRED (FLY) 2. MODERATE DAMAGE - CHECK FLIGHT CONTROLS OR AIRCRAFT (LAND) 3. MAJOR DAMAGE - AUTO ROTATE



# TASK ANALYSIS

MISSION PHASE - ENVIRONMENT				SUBSYSTEM - WEATHER				SUBSYSTEM - AIRCRAFT				
FUNCTION - LEAD/200P				CONTROL				FEEDBACK				
VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION	NAME	OPTIONS	EQUIPMENT RESP	ENVIRONMENT	STIMULUS INPUT	OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
1. CHECK	CLEARANCE	OBSTACLE	OBSERVE AREA OF INTENDED FLIGHT PATH FOR OBSTACLES	N/A	N/A	N/A	D	TERRAIN	N/A	1		MUST DETECT AND EVALUATE POSSIBLE FLIGHT PATH DATA
2. ADJUST	CONTROL	COLLECTIVE	LOWER COLLECTIVE CONTROL	COLLECTIVE	UP/DOWN	VARIES MAIN BLADE PITCH IN DIRECTION OF ACTION	D	TACTILE	DEGREE OF CONTROL MOVEMENT	1		MUST CORRECTLY ADJUST CONTROLS TO MAINTAIN AIRCRAFT CONTROL
3. ADJUST	CONTROL	PEDALS	MAINTAIN AIRCRAFT TRIM	PEDAL(S)	IN/OUT RIGHT/LEFT	MAINTAINS A/C HEADING	D	TACTILE	DEGREE OF CONTROL MOVEMENT	1		
4. ADJUST	CONTROL	CYCLIC	MAINTAIN AIRCRAFT ATTITUDE	CYCLIC	FOR/AFT LEFT/RIGHT	MAINTAINS A/C ATTITUDE	D	TACTILE	DEGREE OF CONTROL MOVEMENT	1		
5. MONITOR	RATE	DESCENT	OBSERVE TERRAIN CLEARANCE	N/A	N/A	N/A	D	TERRAIN, GROUND CLEARANCE	N/A	1		MUST DETECT AND EVALUATE POSSIBLE FLIGHT PATH DATA
6. ASSESS	CONDITION	WASK	VERIFY CLEAR OF THREAT ENVIRONMENT	N/A	N/A	N/A	C		N/A	1		MUST EVALUATE WASK CONDITION CORRECTLY TO AVOID ENEMY DETECTION
7. ADJUST	CONTROLS	AIRCRAFT	MAINTAIN AIRCRAFT AT STABLE HEEL	CONTROLS	RANGE	ADJUSTS/MAINTAINS AIRCRAFT CONDITION	D	CONTROL POSITION TERRAIN	DEGREE OF CONTROL MOVEMENT	1		MUST CORRECTLY ADJUST CONTROLS TO MAINTAIN AIRCRAFT CONTROL
8. CHECK	INSTRUMENTS	ENGINE	SCAN INSTRUMENTS FOR TOLERANCE VALUES	INDICATORS	SCALE RANGE	DISPLAY A/C ENGINE CONDITION	D	INDICATOR DISPLAYS	IN TOLERANCE RANGE	1		MUST DETECT AND EVALUATE INDICATOR READING CORRECTLY TO ASSURE IN TOLERANCE OPERATION
9. REPORT	DETECTION	ENEMY	TRANSMIT REPORT OF ENEMY THREAT AND EVASIVE ACTION	RADIO	UHF, VHF, FM	TRANSMITS MESSAGE	D	SUP	MESSAGE CONTENT	1		MUST CLEARLY AND ACCURATELY TRANSMIT THREAT DATA
10. CHECK	CLEARANCE	OBSTACLE	OBSERVE AREA OF INTENDED FLIGHT FOR OBSTACLES	N/A	N/A	N/A	D	TERRAIN	N/A	1		MUST DETECT AND EVALUATE POSSIBLE FLIGHT PATH OBSTACLES
11. ADJUST	CONTROL	COLLECTIVE	ADJUST COLLECTIVE AS REQUIRED TO MAINTAIN OR CHANGE ALTITUDE AS REQUIRED	COLLECTIVE	UP/DOWN	VARIES MAIN BLADE PITCH (TORQUE)	D	TACTILE	DEGREE OF CONTROL MOVEMENT	1		MUST CORRECTLY ADJUST CONTROLS TO MAINTAIN AIRCRAFT CONTROL
12. ADJUST	CONTROL	PEDALS	MAINTAIN AIRCRAFT TRIM	PEDALS	LEFT/RIGHT	MAINTAINS A/C HEADING	D	TACTILE	DEGREE OF CONTROL MOVEMENT	1		
13. ADJUST	CONTROL	CYCLIC	ADJUST CYCLIC CONTROL TO MAINTAIN AIRCRAFT TO POSITION	CYCLIC	FOR/AFT LEFT/RIGHT	VARIES AIRCRAFT PITCH ATTITUDE	D	TACTILE	DEGREE OF CONTROL MOVEMENT	1		MUST CORRECTLY ADJUST CONTROLS TO MAINTAIN AIRCRAFT CONTROL AND TO AVOID ENEMY DETECTION
14. ASSESS	CONDITION	WASK	NOTIFY CLEAR OF THREAT ENVIRONMENT	N/A	N/A	N/A	D	TERRAIN, GROUND CLEARANCE	N/A	1		MUST EVALUATE WASK CONDITION CORRECTLY TO AVOID ENEMY DETECTION

## TASK ANALYSIS—

[illegible][illegible][illegible]

# TASK ANALYSIS

MISSION PHASE ENVIRONMENT  
FUNCTION: NAVIGATE TO NEW ACP

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. MAINTAIN	COURSE	SELECTED	NAVIGATE ON COURSE SELECTED TO ACP
2. MAINTAIN	MASK		ADJUST AIRCRAFT FOR MINIMUM ALTITUDE OVER TERRAIN
3. MONITOR	OBSTACLES	FLIGHT PATH	VISUALLY INSPECT AIRSPACE IN FLIGHT PATH
4. CHECK		WIND DIRECTION	OVERSEE WATER, TREES, WEATHER REPORT AIRCRAFT FEEL
5. SELECT	PATH	APPROACH	DETERMINE APPROACH DIRECTION
6. SELECT	POINT	TERMINATION	DETERMINE HOVER SPOT
7. EVALUATE	SIZE	HOVER POINT	ASCERTAIN HOVER CLEARANCE
8. MAINTAIN	HOVER	STABLE	HOVER AIRCRAFT USING CYCLIC, PEDALS, COLLECTIVE

SEGMENT: ENEMY DETECTION  
SUBSYSTEM:

NAME	CONTROL/DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK C/D/V/A/OTHER	STIMULUS INPUT
MAP	MAP SCALE	DISPLAY TERRAIN	D ✓	MAP TERRAIN
N/A	N/A	N/A	C ✓	TERRAIN, A/C FLIGHT CONTROLS
N/A	N/A	N/A	C ✓	TERRAIN
N/A	N/A	N/A	D ✓	TERRAIN
N/A	N/A	N/A	D ✓	TERRAIN
N/A	N/A	N/A	D ✓	TERRAIN
N/A	N/A	N/A	D ✓	TERRAIN
FLIGHT		DETERMINE AIRCRAFT POSITION/OPERATION	C ✓	AIRCRAFT POSITION AND ALTITUDE

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
MAP SCALE	1	ACCURATE TO 500 DIGIT COORDINATE	MOST DETECT AND IDENTIFY FLIGHT PATH
N/A	1		MOST MAINTAIN A/C CONTROL AND ALTITUDE TO PREVENT IMPACT WITH OBSTACLES
N/A	1		MOST DETECT AND IDENTIFY FLIGHT PATH OBSTACLES
N/A	1		
N/A	1		
N/A	1		
ADJUST FLIGHT CONTROLS	1		

# TASK ANALYSIS

MISSION PHASE				SUBSYSTEM				SEGMENT			
FUNCTION				RETURN TO BASE				DEPART WAVEFORM AREA			



# TASK ANALYSIS

MISSION PHASE RETURN TO BASE  
FUNCTION DETERMINE FLIGHT ROUTE (IF NOT DONE DURING PRE-FLIGHT)

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
DETERMINE	POSITION	DEPARTURE	LOCATE PRESENT POSITION INTERSECTION METHOD
SELECT	COURSE	FLIGHT	DETERMINE BEST COURSE IN TERMS OF EASE OF NAVIGATION, FORCE LANDING DROPPES, MISSING ABILITY, SHORTEST ROUTE
SELECT	CHECKPOINTS		LOCATE CHECKPOINTS THAT ARE EASY TO LOCATE, IDENTIFY TERRAIN FEATURES, EASY TO IDENTIFY (STAND OUT), ADEQUATE IN NUMBER, IN PROXIMITY TO EACH OTHER
PLOT	COURSE		PLOT COURSE ON MAP

SEGMENT REPORT MANEUVER AREA  
SUBSYSTEM

NAME	CONTROL	OPTIONS	EQUIPMENT RESP	FEEDBACK			STIMULUS INPUT
				SEE	VIA	OTHER	
MAP		MAP SCALE	DISPLAYS TERRAIN	0			MAP
MAP		MAP SCALE	DISPLAYS TERRAIN	0			MAP
MAP		MAP SCALE	DISPLAYS TERRAIN	0			MAP
MAP		MAP SCALE	DISPLAYS TERRAIN	0			MAP

OPERATOR DECISION OPTIONS	CRIT. RESP	ACCURACY REQUIRED	COMMENTS
MAP SCALE	1	ACCURATE TO 100 YD & 100 FT COORDINATE	MOST DEFECT: IDENTIFY AND EVALUATE TERRAIN FEATURES CORRECTLY
MAP SCALE	1	-	MOST DEFECT: IDENTIFY AND EVALUATE TERRAIN FEATURES CORRECTLY
MAP SCALE	1	-	-
MAP SCALE	1	-	-

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. ADJUST	CONTROL	COLLECTIVE	ACTIVATE COLLECTIVE CONTROL TO ATTAIN DESIRED BLADE PITCH ANGLE TO CORRESPOND TO DESIRED AIRSPEED
2. ADJUST	CONTROL	CYCLIC	ACTIVATE CYCLIC CONTROL TO ATTAIN DESIRED ROTOR ANGLE TO CORRESPOND TO DESIRED TAS
3. MONITOR	INDICATOR	AIRSPEED	OBSERVE AIRSPEED INDICATOR TO DETERMINE AIRSPEED RELATIVE TO DESIRED VELOCITY
4. MONITOR	SPEED	GROUND	OBSERVE RATE OF TERRAIN PASSAGE
5. MONITOR	INDICATOR	ALTITUDE	OBSERVE ALTITUDE TO CORRELATE AIRSPEED TO ALTITUDE
6. ADJUST	PEDALS	AFT ROTOR	ACTIVATE APPROPRIATE PEDALS TO ACHIEVE DESIRED A/C HEADING (TRIM)
7. MONITOR	INDICATOR	PITCH ATTITUDE	OBSERVE INDICATOR TO ASCERTAIN A/C IS IN DESIRED PITCH ATTITUDE
8. MONITOR	ATTITUDE	PITCH	OBSERVE TIP PATH PLANE

## TASK ANALYSIS

NAME	CONTROL/DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK V/A OTHER	STIMULUS INPUT
COLLECTIVE CONTROL	UP-DOWN	ALTERS PITCH OF ROTOR BLADES TO CONFORM TO DIRECTION OF APPLIED FORCE (I.E. UP-DOWN) (TORQUE UP/DOWN)	C /	VISUAL (EXTERNAL) AIRSPEED INDICATOR, TORQUE PETER, ALTITUDE
CYCLIC CONTROL	FOR-AFT (LEFT-RIGHT)	ALTERS ROTOR ATTITUDE TO CONFORM TO DIRECTION OF APPLIED FORCE (I.E. LEFT-RIGHT) PITCH ATTITUDE CHANGE	C /	VISUAL PITCH ATTITUDE (EXTERNAL) AIRSPEED INDICATOR
AIRSPEED INDICATOR	N/A	TRANSMITS INDICATION OF A/C VELOCITY RELATIVE TO THE GROUND	C /	VISUAL (EXTERNAL) AIRSPEED INDICATOR
N/A	N/A	N/A	C /	TERRAIN
ALTITUDE	N/A	TRANSMITS INDICATION OF A/C HEIGHT FROM GROUND	C /	VISUAL (EXTERNAL) ALTITUDE INDICATOR, ALTITUDE PETER, ALTITUDE
AFT ROTOR PEDALS	LEFT-IN-OUT RIGHT-IN-OUT	ALTERS PITCH OF REAR ROTOR BLADES TO OFFSET MAIN ROTOR TORQUE AND STEER HELICOPTER	C /	VISUAL (EXTERNAL) ALTITUDE INDICATOR (TRIM)
PITCH ATTITUDE	N/A	TRANSMITS VISUAL INDICATION OF A/C PITCH ATTITUDE	C /	VISUAL (EXTERNAL) PITCH ATTITUDE INDICATOR
ROTOR TIP	N/A	N/A		HORIZON

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
MAY ACTIVATE CONTROL UP OR DOWN	1	MAINTAIN AIRSPEED TO WITHIN + 5K TAS OF REQUIRED TAS	MUST ACTUATE CONTROL IN APPROPRIATE DIRECTION TO ACHIEVE DESIRED AIRSPEED AND PREVENT POSSIBLE LOSS OF CONTROL WITH GROUND OR OBSTACLES
MAY ACTIVATE CONTROL FOR-AFT AND LEFT-RIGHT	1	MAINTAIN AIRSPEED TO WITHIN + 5K TAS OF REQUIRED TAS	
N/A	2	MUST READ AIRSPEED TO WITHIN + 5K	MUST DETECT AND INTERPRET AIRSPEED INDICATOR CORRECTLY TO MAINTAIN ADJUST TO DESIRED AIRSPEED
N/A	2	MUST READ TO WITHIN + 10	MUST DETECT AND INTERPRET ALTITUDE INDICATOR CORRECTLY TO MAINTAIN CONTACT WITH GROUND AND ESTABLISH/ MAINTAIN DESIRED ALTITUDE AS REQUIRED BY MISSION
MAY ACTIVATE EITHER OR BOTH PEDALS IN OR OUT	1	TRIM BALL CENTERED	MUST ACTUATE PEDALS APPROPRIATELY TO MAINTAIN REQUIRED HEADING AND ALTITUDE OF HELICOPTER
N/A	2		MUST DETECT AND INTERPRET INDICATOR CORRECTLY TO ADJUST/MAINTAIN A/C ATTITUDE WITH RESPECT TO MISSION REQUIREMENTS

Continued on next page

## TASK ANALYSIS-

[illegible]

# TASK ANALYSIS

MISSION PHASE				SUBSYSTEM				OPERATOR				COMMENTS			
RETURN TO BASE				FLIGHT CONTROL											
FUNCTION				MONITOR/ADJUST ALTITUDE											
VERB	TASK		MODIFIER	OPERATOR ACTION		EQUIPMENT RESP	FEEDBACK		STIMULUS INPUT	OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED			
	OBJECT	MODIFIER		OBJECT	MODIFIER		OK	NOT OK							
1. ADJUST	CONTROL	COLLECTIVE		ACTIVATE CONTROL TO ACHIEVE MAIN ROTOR BLADE PITCH ATTITUDE REQUIRED FOR DESIRED ALTITUDE		TILTS MAIN ROTOR BLADE ANGLE IN DIRECTION OF TORQUE (PITCH)	D ✓		VISUAL (EXTERNAL) ALTITUDE INDICATOR	MAY ACTIVATE CONTROL UP OR DOWN, INCREASE/DECREASE TORQUE	1		MUST ACTIVATE CONTROL APPROPRIATE TO ACHIEVE DESIRED ALTITUDE AND AVOID A/C IMPACT WITH OBSTACLES ON THE GROUND		
2. MONITOR	ALTITUDE			RESERVE: 1) TERRAIN AND AIRSPACE AROUND HELD TO IDENTIFY POTENTIAL FLIGHT HAZARDS AND REMAIN BELOW SURROUNDING TERRAIN FEATURES FOR SAFETY. 2) OTHER AIRCRAFT, 3) BIRD.		N/A	C ✓		EXTERNAL VISUAL	NONE	1		MUST DETECT, IDENTIFY AND EVALUATE AIRCRAFT AND TERRAIN FEATURES THAT COULD BECOME POTENTIAL FLIGHT HAZARDS AND/OR OBSTACLES TO AIRCRAFT		
3. MONITOR	ALTITUDE			MONITOR A/C ALTITUDE		ALTITUDE DISPLAY FLUCTUATES IN ACCORD-	D ✓		ALTITUDE DISPLAY	NONE	2		MUST DETECT AND INTERPRET DISPLAY CORRECTLY TO PRECLUDE IMPACT OF A/C WITH GROUND		
4. ADJUST	PEDALS	AFT ROTOR		ACTIVATE APPROPRIATE PEDALS TO ACHIEVE A/C HEADING AND TRIM		LEFT: IN-OUT, ALTERS PITCH OF AFT ROTOR (TRIM) RIGHT: IN-OUT	D ✓		VISUAL (EXTERNAL) ALTITUDE INDICATOR, TOP, BALL & NEEDLE	MAY ACTIVATE EITHER PEDAL IN OR OUT	1		MUST ACTIVATE PEDALS APPROPRIATELY TO MAINTAIN CORRECT A/C HEADING AND TRIM		



# TASK ANALYSIS

MISSION PHASE				SUBSYSTEM			
RETURN TO BASE				CRUISE MODE			
FUNCTION				SUBSYSTEM			
ADJUST/MONITOR HEADING				SUBSYSTEM			
VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION	NAME	CONTROL OPTIONS	EQUIPMENT RESP	FEEDBACK
							NO YES VIA OTHER
1. POSITION	CYCLIC	CONTROL	ACTUATES CONTROL TO KEEP A/C ON DESIRED COURSE	CYCLIC	FORWARD, RIGHT/LEFT	TILTS MAIN ROTOR IN DIRECTION OF APPLIED FORCE	D ✓ TACTILE
2. POSITION	PEDALES	A/C ROTOR	ACTUATES CONTROLS TO KEEP A/C NOSE ON COURSE	PEDALES	RIGHT/LEFT IN/OUT	TILTS A/C ROTOR BLADE IN DIRECTION OF APPLIED FORCE (TRIM)	D ✓ TACTILE
3. MONITOR	INDICATOR	HEADING	OBSERVE INDICATOR TO DETERMINE HEADING	INDICATOR	SCALE RANGE	DISPLAYS A/C HEADING	D ✓
4. MONITOR	AIRSPACE		OBSERVES TERRAIN, OBSTACLES, ETC.	N/A	N/A	N/A	D ✓ AIRSPACE
5. MAINTAIN	COURSE	DESIRED	OBSERVES TERRAIN, OBSTACLES, ETC.	N/A	N/A	N/A	D ✓

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
POSITION CONTROL (FORWARD) OR RIGHT/LEFT	1	± 5°	MUST ACTUATE CONTROL IN APPROPRIATE DIRECTION TO MAINTAIN CONTROL OF A/C AND AVOID CONTACT WITH OBSTACLES
POSITION CONTROLS IN OR OUT, RIGHT OR LEFT PEDAL	1	BALL CENTERED	
RANGE OF A/C HEADING SCALE	1		MUST DETECT AND ACCURATELY INTERPRET INDICATOR TO MAINTAIN DESIRED COURSE
N/A	2		MUST DETECT AND INTERPRET VISUAL OBSTACLE AND AVOID IMPACT OF A/C WITH OBSTACLES
POSITION CONTROL (FORWARD) OR RIGHT/LEFT	1	± 5°	MUST ACTUATE CONTROL IN APPROPRIATE DIRECTION TO MAINTAIN CONTROL OF A/C AND AVOID CONTACT WITH OBSTACLES

# TASK ANALYSIS

MISSION PHASE: RETURN TO BASE  
FUNCTION: MONITOR INSTRUMENTS (CROSS CHECK)

SEGMENT: CRUISE NOE  
SUBSYSTEM: INSTRUMENTS

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. CHECK	INDICATOR	TORQUE METER	VISUALLY OBSERVE READING ON INDICATED GAUGE
2. CHECK	TACHOMETER	N <sub>1</sub>	-
3. CHECK	GAUGE	EGT	-
4. CHECK	INDICATOR	DUAL TACH	-
5. CHECK	INDICATOR	AIRPEED	-
6. CHECK	ALTIMETER, YSI	ALTIMETER YSI	-
7. CHECK	INDICATOR	RADIO MAG	-
8. CHECK	INDICATOR	FUEL PRESSURE	-
9. CHECK	INDICATOR	FUEL QUANTITY	-
10. CHECK	INDICATOR	TRANSMISSION OIL PRESSURE	-
11. CHECK	INDICATOR	ENGINE OIL PRESSURE	-
12. CHECK	INDICATOR	TRANSMISSION OIL TEMPERATURE	-
13. CHECK	INDICATOR	ENGINE OIL TEMPERATURE	-
14. ADJUST	CONTROLS	FLIGHT	ADJUST CYCLES, COLLECTIVE AND PITCH AS NECESSARY TO MAINTAIN DESIRED FLIGHT ATTITUDE
15. MONITOR	AIRSPACE		OBSERVE A/C CLEARANCE AND OBSTACLE AVOIDANCE

NAME	CONTROL	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT
TORQUE METER	0 - 50	DISPLAYS TORQUE (POWER) BEING USED	C /	GAUGE - COLLECTIVE POSITION
N <sub>1</sub> TACH	0 - 100%	DISPLAYS PERCENT RPM	C /	
EGT GAUGE	0 - 1000°	DISPLAYS TEMPERATURE	C /	
DUAL TACH		DISPLAYS ROTOR RPM DISPLAYS ENGINE RPM	C /	GAUGE
AIRPEED INDICATOR	0 - 190 KTS	DISPLAYS INDICATED AIRSPEED	C /	GAUGE
ALTIMETER YSI	RANGE CLIMB, DESCENT	DISPLAYS ALTITUDE DISPLAYS RATE OF CLIMB	C /	GAUGE
RMI	0 - 360°	DISPLAYS AIRCRAFT HEADING	C /	GAUGE
FUEL PRESSURE	5 - 30	DISPLAYS FUEL PRESSURE	C /	GAUGE
QUANTITY		DISPLAYS FUEL QUANTITY	C /	GAUGE
OIL PRESSURE	0 - 100	DISPLAYS OIL PRESSURE	C /	GAUGE
OIL PRESSURE	0 - 100	DISPLAYS OIL PRESSURE	C /	GAUGE
OIL TEMPERATURE		DISPLAYS OIL TEMPERATURE	C /	GAUGE
OIL TEMPERATURE		DISPLAYS OIL TEMPERATURE	C /	GAUGE
FLIGHT		DETERMINES AIRCRAFT ATTITUDE	C /	INSTRUMENTS & OUTSIDE REFERENCE TERRAIN, AIRSPACE
N/A				

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
INCREASE, DECREASE		+ 2	MUST DETECT, IDENTIFY AND EVALUATE INSTRUMENT DISPLAYS AND CONTROL POSITIONS TO MAINTAIN A/C OPERATION AND MAINTAIN SAFE FLIGHT
INCREASE, DECREASE		+ 1	
		+ 15	
		+ 25	
		+ 5	
		+ 50	
INCREASE, DECREASE TORQUE, ENGINE, RATE PITCH ATTITUDE		+ 5	
		+ 1	
		+ 25	
		+ 3	
		+ 3	
		+ 5	
		+ 5	
CHANGE OF HOLD CONSTANT TERRAIN, AIRSPACE			

## TASK ANALYSIS

SEGMENT CRUISE NOE  
SUBSYSTEM

MISSION PHASE	RETURN TO BASE
FUNCTION	MONITOR AIRSPACE

[illegible]

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# TASK ANALYSIS

MISSION PHASE RETURN TO BASE  
FUNCTION MAINTAIN OBSTACLE CLEARANCE

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. MONITOR	CLEARANCE	ROTOR BLADE	VISUAL OBSERVATION OF MAIN ROTOR BLADES IN REFERENCE TO CLEARANCE WITH SURROUNDING TERRAIN AND OBSTACLES
2. MONITOR	CLEARANCE	SKIDS	VISUAL OBSERVATION OF SKIDS IN REFERENCE TO CLEARANCE WITH TERRAIN AND OBSTACLES
3. OBSERVE	OBSTACLES		IDENTIFY APPROACHING OBSTACLES AND DETERMINE AVOIDANCE CLEARANCES REQUIRED
4. MONITOR	ATTITUDE	TAIL	MONITOR PITCH ATTITUDE TO DETECT AND AVOID TAIL LOW CONDITION
5. ADJUST	CONTROL	COLLECTIVE PITCH	ACTUATE COLLECTIVE PITCH CONTROL TO ALTER AIRCRAFT AND PROVIDE OBSTACLE CLEARANCE

SEGMENT CRUISE NOT  
SUBSYSTEM FLIGHT CONTROL

NAME	CONTROL OPTIONS	EQUIPMENT RESP.	FEEDBACK			STIMULUS INPUT
			C	V	A	OTHER
BLADES	N/A	N/A	C ✓			PER-CEIVED OBSTACLES IN FLIGHT PATH
SKIDS	N/A	N/A	C ✓			OBSTACLES IN FLIGHT PATH
N/A	N/A	N/A	C ✓			OBSTACLES IN FLIGHT PATH
ATTITUDE INDICATOR	N/A	TRANSMITS INFORMATION TO A/C ATTITUDE	D ✓			1) PITCH ATTITUDE 2) ATTITUDE INDICATOR POSITION
PITCH ATTITUDE			D ✓			
COLLECTIVE PITCH CONTROL	UP-DOWN	CHANGES MAIN ROTOR BLADE PITCH ANGLE IN DIRECTION OF APPLIED FORCE (THROTTLE)	D ✓			1) INTERNAL VISUAL 2) AUTOMATED INDICATION

OPERATOR DECISION OPTIONS	CUT RESP.	ACCURACY REQUIRED	COMMENTS
N/A	2		MUST JUDGE CLEARANCES ACCURATELY ENOUGH TO PREVENT IMPACT OF ROTOR BLADES WITH OBSTACLES
N/A	2		MUST JUDGE CLEARANCES ACCURATELY ENOUGH TO PREVENT IMPACT OF SKIDS WITH OBSTACLES
N/A	2		MUST JUDGE SIZE AND SHAPE OF APPROACHING OBSTACLES WITH SUFFICIENT DECISION TO DETERMINE REQUIRED CLEARANCE BETWEEN A/C AND OBSTACLE
N/A	2		MUST DETECT CHANGES IN A/C ATTITUDE RESULTING IN A "TAIL LOW" ATTITUDE
MAY ACTUATE CONTROL UP OR DOWN	1		MUST ACQUAINT PERSON IN APPROPRIATE POSITION AND TO NECESSARY DEGREE TO ACHIEVE A/C ATTITUDE SUFFICIENT TO CLEAR OBSTACLES

# TASK ANALYSIS

MISSION PHASE RETURN TO BASE  
FUNCTION MONITOR OBSTACLE CLEARANCE

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
1. COMMUNICATE WARNING	OBSTACLE		VERBALLY TRANSMIT WARNING OF CHANGING TERRAIN ELEVATION
2. COMMUNICATE WARNING	VEGETATION		VERBALLY TRANSMIT WARNING OF CHANGE IN TERRAIN VEGETATION
3. MONITOR	AIRSPACE		SCAN AIRSPACE TO DETECT AND IDENTIFY POTENTIAL FLIGHT HAZARDS AND/OR CONDITIONS REQUIRING MODIFICATION OF FLIGHT PATH, SPEED, ALTITUDE

SEGMENT CRUISE WVE  
SUBSYSTEM

NAME	CONTROL DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK				STIMULUS INPUT
			C	V	A	OTHER	
N/A	N/A	N/A	C	V			VISUAL TERRAIN FEATURES
N/A	N/A	N/A	C	V			VISUAL TERRAIN FEATURES
N/A	N/A	N/A	C	V			VISUAL TERRAIN FEATURES

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
N/A	2		MUST CLEARLY AND ACCURATELY VERBALLY TRANSMIT TERRAIN CHANGE DETAILS
N/A	2		MUST CLEARLY AND ACCURATELY VERBALLY TRANSMIT TERRAIN CHANGE DETAILS
N/A	2		MUST DETECT AND IDENTIFY FACTORS IN THE A/C AIRSPACE THAT REQUIRE CHANGES TO THE A/C FLIGHT PATH, SPEED AND/OR ALTITUDE

# TASK ANALYSIS

MISSION PHASE RETURN TO BASE			
FUNCTION INFORMATIVE POSITION			
VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. DETERMINE	INTERSECTION	KNOWN POINTS	OBSERVE LOCATION OF TWO KNOWN POINTS
2. CHECK	POINT	BENEATH AIRCRAFT	OBSERVE POINT BENEATH AIRCRAFT
3. ESTIMATE	DISTANCE	FROM KNOWN POINTS	ESTIMATE DISTANCES
4. ESTIMATE	TIME	FROM KNOWN POINT	ESTIMATE TIME
5. IDENTIFY	FEATURES	MAP & TERRAIN	CORRELATE MAP & TERRAIN FEATURES
6. VERIFY	CHECKPOINTS		OBSERVE MAP & TERRAIN
7. IDENTIFY	POSITION	AIRCRAFT	DETERMINE AIRCRAFT POSITION

SEGMENT CRUISE W/		SUBSYSTEM		FEEDBACK		STIMULUS	
NAME	CONTROL/DISPLAY	OPTIONS	EQUIPMENT	RESP	V/A	OTHER	INPUT
N/A	N/A	N/A	N/A	N/A	D	✓	TERRAIN
N/A	N/A	N/A	N/A	N/A	D	✓	TERRAIN
N/A	N/A	N/A	N/A	N/A	D	✓	TERRAIN
N/A	N/A	N/A	N/A	N/A	D	✓	TERRAIN
MAP	TERRAIN		DISPLAYS	TERRAIN	D	✓	MAP, TERRAIN
MAP	TERRAIN		DISPLAYS	TERRAIN	D	✓	MAP, TERRAIN
N/A	N/A	N/A	N/A	N/A	D	✓	MAP, TERRAIN

OPERATOR DECISION OPTIONS	CRIT. RESP.	ACCURACY REQUIRED	COMMENTS
N/A	1		MUST DETECT AND IDENTIFY CHECKPOINTS
N/A	1		NONE
N/A	1		MUST ACCURATELY ESTIMATE DISTANCES
N/A	1		MUST ACCURATELY ESTIMATE TIME
MAP SCALE	1		MUST SELECT MAP AT APPROPRIATE SCALE TO GIVE ACCURATE POSITION COMPUTATIONS
N/A	1		MUST DETECT AND IDENTIFY CHECKPOINTS
N/A	1		MUST IDENTIFY A/C POSITION ACCURATELY

# TASK ANALYSIS

MISSION PHASE RETURN TO BASE  
FUNCTION DESTROY INTERSECTION

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. SELECT	LOCATIONS	MAP	PICKS TWO OR MORE TERRAIN FEATURES
2. DETERMINE	DIRECTION	LOCATIONS	DETERMINE DIRECTION OF FEATURES FROM AIC (MAP COMPASS OR RND)
3. ESTIMATE	DISTANCE	LOCATION	ESTIMATE DISTANCE TO EACH FEATURE
4. REFORM	INTERSECT	LOCATION LINE	INTERSECT FEATURE DIRECTION LINES WITH AIC
5. DETERMINE	POSITION	AIRCRAFT	NOTES INTERSECTION POINT
6. VERIFY	CHECKPOINTS		VERIFY BY OBSERVATION OF AREA AND TERRAIN FEATURES

SEGMENT CRUISE  
SUBSYSTEM

NAME	CONTROL/DISPLAY OPTIONS	EQUIPMENT RESP	FEEDBACK				STIMULUS INPUT
			YES	NO	V	A	
MAP	MAP SCALE	N/A	D	✓			MAP
MAP	MAP SCALE	N/A	D	✓			MAP
MAP	MAP SCALE	N/A	D	✓			MAP
MAP	MAP SCALE	DISPLAYS INTERSECTING LINES	D	✓			MAP
MAP	MAP SCALE	N/A	D	✓			MAP
MAP	MAP SCALE	N/A	D	✓			TERRAIN FEATURES

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
MAP SCALE	1	ACCURATE TO SIX DIGITS	MUST DETECT AND IDENTIFY APPROPRIATE TERRAIN FEATURES
MAP SCALE	1		MUST IDENTIFY CORRECT DIRECTION
MAP SCALE	1	NONE	
N/A	1	ACCURATE TO SIX DIGITS	MUST DETECT AND IDENTIFY POINTS OF ORIGIN
MAP SCALE	1	ACCURATE TO SIX DIGITS	MUST DETECT AND IDENTIFY INTERSECTION POINT
MAP SCALE	1		MUST DETECT AND IDENTIFY TERRAIN FEATURES WITH RELATION TO INTERSECT POINT



## TASK ANALYSIS

[illegible]

## TASK ANALYSIS-

[illegible]

SEGMENT	CRUISE NO.
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# TASK ANALYSIS

MISSION PHASE: RETURN TO BASE  
FUNCTION: COMMUNICATE - CLEARANCE, POSITION

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION
1. SELECT	RADIO		SWITCHES TO RADIO SELECTED
2. ADJUST	FREQUENCY	RADIO	TUNE IN DESIRED FREQUENCY
3. TRANSMIT	POSITION		SEND GRID COORDINATES, LANDMARKS, ETC.
4. TRANSMIT	REQUEST	ARTY CLEARANCE	REQUEST CLEARANCE AND HAZARD INFORMATION TO DESTINATION
5. RECEIVE	ADVISORY	ARTY	RECEIVE INFORMATION RELATIVE TO POSSIBLE FLIGHT HAZARDS, ETC.

SEGMENT: CRUISE WVE  
SUBSYSTEM: COMMUNICATIONS

NAME	CONTROL/DISPLAY OPTIONS		EQUIPMENT RESP.	FEEDBACK		STIMULUS INPUT
	FM, ILM, VHF	OTHER		VIA	OTHER	
SWITCH	FM, ILM, VHF		ENABLES RADIO TRANSMIT/RECEIVE	✓	TACTILE	IC PANEL, RADIO/SWITCH POSITION
DIAL	FREQUENCY RANGE		ENABLES SELECT FREQUENCY	✓	TACTILE	IC PANEL, DIAL POSITION
MICROPHONE	N/A		TRANSMITS MESSAGE	✓		MAP, TERRAIN
MICROPHONE	N/A		TRANSMITS MESSAGE	✓		SOP
HEADSET	N/A		TRANSMITS MESSAGE	✓		SOP

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
FM, ILM, VHF	1		MUST IDENTIFY AND SELECT APPROPRIATE RADIO
FREQUENCY RANGE	1		MUST IDENTIFY AND TUNE IN CORRECT FREQUENCY
MESSAGE CONTENT	1		MUST TRANSMIT ACCURATE POSITION INFORMATION
MESSAGE CONTENT	1		NONE
N/A	1		NONE



# TASK ANALYSIS

MISSION PHASE				SEGMENT				APPROACH							
FUNCTION				SUBSYSTEM											
TERMINATION															
PRE-LANDING CHECK															
VERB	TASK	OBJECT	MODIFIER	OPERATOR ACTION	NAME	CONTROL	OPTIONS	EQUIPMENT RESP	FEEDBACK	STIMULUS INPUT	OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS	
1. CHECK	DUAL TRIM			VISUALLY CHECK ELEM INSTRUMENT/ PANEL AND CAL OUT CHECK TO COPILOT FOR VERIFICATION	TACHOMETER			DISPLAYS	D ✓	GAUGE	IN TOLERANCE	3			
2. CHECK	LIGHT		MASTER CAUTION	"	LIGHTS	ON/OFF		DISPLAYS	D ✓	LIGHT	ON/OFF	3			
3. CHECK	LIGHT		CAUTION PANEL	"	LIGHTS	ON/OFF		DISPLAYS	D ✓	LIGHT	ON/OFF	3			
4. CHECK	TEMPERATURE		ENGINE TRANSMISSION	"	GAUGE	IN/OUT OF TOLERANCE		DISPLAYS	D ✓	GAUGE	IN TOLERANCE	3			
5. CHECK	PRESSURE		FUEL	"	GAUGE	IN/OUT OF TOLERANCE		DISPLAYS	D ✓	GAUGE	IN TOLERANCE	3			
6. CHECK	PRESSURE		FUEL	"	GAUGE	IN/OUT OF TOLERANCE		DISPLAYS	D ✓	GAUGE	IN TOLERANCE	3			
7. CHECK	QUANTITY		FUEL	"	GAUGE	IN/OUT OF TOLERANCE		DISPLAYS	D ✓	GAUGE	IN TOLERANCE	3			
8. CHECK	SCAS			"	SWITCH	ON/OFF		ACTIVATES POWER TO SYSTEM	D ✓	SWITCH	ON/OFF	3			
9. CHECK	FORCE TRIM			"	SWITCH	ON/OFF		ACTIVATES POWER TO SYSTEM	D ✓	SWITCH	ON/OFF	3			
10. CHECK	ARMAMENT PANEL			"	SWITCH	ON/OFF		ACTIVATES POWER TO SYSTEM	D ✓	SWITCH	ON/OFF	3			
11. CHECK	BEACON		ROTATING	"	SWITCH	ON/OFF		ACTIVATES POWER TO SYSTEM	D ✓	SWITCH	ON/OFF	3			
12. CHECK	INSTRUMENTS		FLIGHT	VISUALLY CHECK FLIGHT INSTRUMENTS TO INSURE PROPER OPERATION	GAUGES	IN/OUT OF TOLERANCE		DISPLAYS	D ✓	GAUGES	IN TOLERANCE	3			
13. CHECK	CLEARANCE		AIRSPACE		N/A	N/A		N/A	D ✓	SURROUNDING AREA	AREA CLEAR/UNCLEAR	3			

## TASK ANALYSIS

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
2. ADJUST	CONTROL	COLLECTIVE	LOWER COLLECTIVE PITCH TO INITIATE DESCENT						
3. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO INITIATE DECELERATION						
4. ADJUST	PEDALS	ANTI-TORQUE	INCREASE RIGHT PEDAL TO COMPEN- SATE FOR TORQUE						
5. MAINTAIN	CLEARANCE	OBSTACLE	ADJUST ALTITUDE DURING DESCENT SO AS TO STAY ABOVE ANY OBSTACLES IN FLIGHT PATH						
6. MONITOR	INSTRUMENTS	ENGINE - FLIGHT	CROSS CHECK OF BOTH ENGINE AND FLIGHT INSTRUMENTS THROUGHOUT FLIGHT						
7. ADJUST	CONTROL	COLLECTIVE	INCREASE OR DECREASE COLLECTIVE PITCH AS REQUIRED TO MAINTAIN A CONSTANT ANGLE OF APPROACH ON SELECTED PATH TO POINT OF INTENDED LANDING						
8. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO OBTAIN A CONSTANT DECELERATION TO ARRIVE AT POINT OF INTENDED LANDING AT ZERO AIRSPEED						
9. ADJUST	PEDALS	ANTI-TORQUE	ADJUST PEDAL POSITION IN CONJUNC- TION WITH CYCLIC TO MAINTAIN DESIRED HEADING AND TRIM						
10. EVALUATE	APPROACH		DETERMINE IF LANDING POSSIBLE OR IF GO AROUND WILL BE NECESSARY						
11. EVALUATE	TERRAIN								

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
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11. EVALUATE	TERRAIN								

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
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5. MAINTAIN	CLEARANCE	OBSTACLE	ADJUST ALTITUDE DURING DESCENT SO AS TO STAY ABOVE ANY OBSTACLES IN FLIGHT PATH						
6. MONITOR	INSTRUMENTS	ENGINE - FLIGHT	CROSS CHECK OF BOTH ENGINE AND FLIGHT INSTRUMENTS THROUGHOUT FLIGHT						
7. ADJUST	CONTROL	COLLECTIVE	INCREASE OR DECREASE COLLECTIVE PITCH AS REQUIRED TO MAINTAIN A CONSTANT ANGLE OF APPROACH ON SELECTED PATH TO POINT OF INTENDED LANDING						
8. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO OBTAIN A CONSTANT DECELERATION TO ARRIVE AT POINT OF INTENDED LANDING AT ZERO AIRSPEED						
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10. EVALUATE	APPROACH		DETERMINE IF LANDING POSSIBLE OR IF GO AROUND WILL BE NECESSARY						
11. EVALUATE	TERRAIN								

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
2. ADJUST	CONTROL	COLLECTIVE	LOWER COLLECTIVE PITCH TO INITIATE DESCENT						
3. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO INITIATE DECELERATION						
4. ADJUST	PEDALS	ANTI-TORQUE	INCREASE RIGHT PEDAL TO COMPEN- SATE FOR TORQUE						
5. MAINTAIN	CLEARANCE	OBSTACLE	ADJUST ALTITUDE DURING DESCENT SO AS TO STAY ABOVE ANY OBSTACLES IN FLIGHT PATH						
6. MONITOR	INSTRUMENTS	ENGINE - FLIGHT	CROSS CHECK OF BOTH ENGINE AND FLIGHT INSTRUMENTS THROUGHOUT FLIGHT						
7. ADJUST	CONTROL	COLLECTIVE	INCREASE OR DECREASE COLLECTIVE PITCH AS REQUIRED TO MAINTAIN A CONSTANT ANGLE OF APPROACH ON SELECTED PATH TO POINT OF INTENDED LANDING						
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10. EVALUATE	APPROACH		DETERMINE IF LANDING POSSIBLE OR IF GO AROUND WILL BE NECESSARY						
11. EVALUATE	TERRAIN								

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
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6. MONITOR	INSTRUMENTS	ENGINE - FLIGHT	CROSS CHECK OF BOTH ENGINE AND FLIGHT INSTRUMENTS THROUGHOUT FLIGHT						
7. ADJUST	CONTROL	COLLECTIVE	INCREASE OR DECREASE COLLECTIVE PITCH AS REQUIRED TO MAINTAIN A CONSTANT ANGLE OF APPROACH ON SELECTED PATH TO POINT OF INTENDED LANDING						
8. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO OBTAIN A CONSTANT DECELERATION TO ARRIVE AT POINT OF INTENDED LANDING AT ZERO AIRSPEED						
9. ADJUST	PEDALS	ANTI-TORQUE	ADJUST PEDAL POSITION IN CONJUNC- TION WITH CYCLIC TO MAINTAIN DESIRED HEADING AND TRIM						
10. EVALUATE	APPROACH		DETERMINE IF LANDING POSSIBLE OR IF GO AROUND WILL BE NECESSARY						
11. EVALUATE	TERRAIN								

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
2. ADJUST	CONTROL	COLLECTIVE	LOWER COLLECTIVE PITCH TO INITIATE DESCENT						
3. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO INITIATE DECELERATION						
4. ADJUST	PEDALS	ANTI-TORQUE	INCREASE RIGHT PEDAL TO COMPEN- SATE FOR TORQUE						
5. MAINTAIN	CLEARANCE	OBSTACLE	ADJUST ALTITUDE DURING DESCENT SO AS TO STAY ABOVE ANY OBSTACLES IN FLIGHT PATH						
6. MONITOR	INSTRUMENTS	ENGINE - FLIGHT	CROSS CHECK OF BOTH ENGINE AND FLIGHT INSTRUMENTS THROUGHOUT FLIGHT						
7. ADJUST	CONTROL	COLLECTIVE	INCREASE OR DECREASE COLLECTIVE PITCH AS REQUIRED TO MAINTAIN A CONSTANT ANGLE OF APPROACH ON SELECTED PATH TO POINT OF INTENDED LANDING						
8. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO OBTAIN A CONSTANT DECELERATION TO ARRIVE AT POINT OF INTENDED LANDING AT ZERO AIRSPEED						
9. ADJUST	PEDALS	ANTI-TORQUE	ADJUST PEDAL POSITION IN CONJUNC- TION WITH CYCLIC TO MAINTAIN DESIRED HEADING AND TRIM						
10. EVALUATE	APPROACH		DETERMINE IF LANDING POSSIBLE OR IF GO AROUND WILL BE NECESSARY						
11. EVALUATE	TERRAIN								

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
2. ADJUST	CONTROL	COLLECTIVE	LOWER COLLECTIVE PITCH TO INITIATE DESCENT						
3. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO INITIATE DECELERATION						
4. ADJUST	PEDALS	ANTI-TORQUE	INCREASE RIGHT PEDAL TO COMPEN- SATE FOR TORQUE						
5. MAINTAIN	CLEARANCE	OBSTACLE	ADJUST ALTITUDE DURING DESCENT SO AS TO STAY ABOVE ANY OBSTACLES IN FLIGHT PATH						
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10. EVALUATE	APPROACH		DETERMINE IF LANDING POSSIBLE OR IF GO AROUND WILL BE NECESSARY						
11. EVALUATE	TERRAIN								

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
2. ADJUST	CONTROL	COLLECTIVE	LOWER COLLECTIVE PITCH TO INITIATE DESCENT						
3. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO INITIATE DECELERATION						
4. ADJUST	PEDALS	ANTI-TORQUE	INCREASE RIGHT PEDAL TO COMPEN- SATE FOR TORQUE						
5. MAINTAIN	CLEARANCE	OBSTACLE	ADJUST ALTITUDE DURING DESCENT SO AS TO STAY ABOVE ANY OBSTACLES IN FLIGHT PATH						
6. MONITOR	INSTRUMENTS	ENGINE - FLIGHT	CROSS CHECK OF BOTH ENGINE AND FLIGHT INSTRUMENTS THROUGHOUT FLIGHT						
7. ADJUST	CONTROL	COLLECTIVE	INCREASE OR DECREASE COLLECTIVE PITCH AS REQUIRED TO MAINTAIN A CONSTANT ANGLE OF APPROACH ON SELECTED PATH TO POINT OF INTENDED LANDING						
8. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO OBTAIN A CONSTANT DECELERATION TO ARRIVE AT POINT OF INTENDED LANDING AT ZERO AIRSPEED						
9. ADJUST	PEDALS	ANTI-TORQUE	ADJUST PEDAL POSITION IN CONJUNC- TION WITH CYCLIC TO MAINTAIN DESIRED HEADING AND TRIM						
10. EVALUATE	APPROACH		DETERMINE IF LANDING POSSIBLE OR IF GO AROUND WILL BE NECESSARY						
11. EVALUATE	TERRAIN								

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
2. ADJUST	CONTROL	COLLECTIVE	LOWER COLLECTIVE PITCH TO INITIATE DESCENT						
3. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO INITIATE DECELERATION						
4. ADJUST	PEDALS	ANTI-TORQUE	INCREASE RIGHT PEDAL TO COMPEN- SATE FOR TORQUE						
5. MAINTAIN	CLEARANCE	OBSTACLE	ADJUST ALTITUDE DURING DESCENT SO AS TO STAY ABOVE ANY OBSTACLES IN FLIGHT PATH						
6. MONITOR	INSTRUMENTS	ENGINE - FLIGHT	CROSS CHECK OF BOTH ENGINE AND FLIGHT INSTRUMENTS THROUGHOUT FLIGHT						
7. ADJUST	CONTROL	COLLECTIVE	INCREASE OR DECREASE COLLECTIVE PITCH AS REQUIRED TO MAINTAIN A CONSTANT ANGLE OF APPROACH ON SELECTED PATH TO POINT OF INTENDED LANDING						
8. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO OBTAIN A CONSTANT DECELERATION TO ARRIVE AT POINT OF INTENDED LANDING AT ZERO AIRSPEED						
9. ADJUST	PEDALS	ANTI-TORQUE	ADJUST PEDAL POSITION IN CONJUNC- TION WITH CYCLIC TO MAINTAIN DESIRED HEADING AND TRIM						
10. EVALUATE	APPROACH		DETERMINE IF LANDING POSSIBLE OR IF GO AROUND WILL BE NECESSARY						
11. EVALUATE	TERRAIN								

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
2. ADJUST	CONTROL	COLLECTIVE	LOWER COLLECTIVE PITCH TO INITIATE DESCENT						
3. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO INITIATE DECELERATION						
4. ADJUST	PEDALS	ANTI-TORQUE	INCREASE RIGHT PEDAL TO COMPEN- SATE FOR TORQUE						
5. MAINTAIN	CLEARANCE	OBSTACLE	ADJUST ALTITUDE DURING DESCENT SO AS TO STAY ABOVE ANY OBSTACLES IN FLIGHT PATH						
6. MONITOR	INSTRUMENTS	ENGINE - FLIGHT	CROSS CHECK OF BOTH ENGINE AND FLIGHT INSTRUMENTS THROUGHOUT FLIGHT						
7. ADJUST	CONTROL	COLLECTIVE	INCREASE OR DECREASE COLLECTIVE PITCH AS REQUIRED TO MAINTAIN A CONSTANT ANGLE OF APPROACH ON SELECTED PATH TO POINT OF INTENDED LANDING						
8. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO OBTAIN A CONSTANT DECELERATION TO ARRIVE AT POINT OF INTENDED LANDING AT ZERO AIRSPEED						
9. ADJUST	PEDALS	ANTI-TORQUE	ADJUST PEDAL POSITION IN CONJUNC- TION WITH CYCLIC TO MAINTAIN DESIRED HEADING AND TRIM						
10. EVALUATE	APPROACH		DETERMINE IF LANDING POSSIBLE OR IF GO AROUND WILL BE NECESSARY						
11. EVALUATE	TERRAIN								

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
2. ADJUST	CONTROL	COLLECTIVE	LOWER COLLECTIVE PITCH TO INITIATE DESCENT						
3. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO INITIATE DECELERATION						
4. ADJUST	PEDALS	ANTI-TORQUE	INCREASE RIGHT PEDAL TO COMPEN- SATE FOR TORQUE						
5. MAINTAIN	CLEARANCE	OBSTACLE	ADJUST ALTITUDE DURING DESCENT SO AS TO STAY ABOVE ANY OBSTACLES IN FLIGHT PATH						
6. MONITOR	INSTRUMENTS	ENGINE - FLIGHT	CROSS CHECK OF BOTH ENGINE AND FLIGHT INSTRUMENTS THROUGHOUT FLIGHT						
7. ADJUST	CONTROL	COLLECTIVE	INCREASE OR DECREASE COLLECTIVE PITCH AS REQUIRED TO MAINTAIN A CONSTANT ANGLE OF APPROACH ON SELECTED PATH TO POINT OF INTENDED LANDING						
8. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO OBTAIN A CONSTANT DECELERATION TO ARRIVE AT POINT OF INTENDED LANDING AT ZERO AIRSPEED						
9. ADJUST	PEDALS	ANTI-TORQUE	ADJUST PEDAL POSITION IN CONJUNC- TION WITH CYCLIC TO MAINTAIN DESIRED HEADING AND TRIM						
10. EVALUATE	APPROACH		DETERMINE IF LANDING POSSIBLE OR IF GO AROUND WILL BE NECESSARY						
11. EVALUATE	TERRAIN								

TASK ANALYSIS									
SEGMENT APPROACH									
SUBSYSTEM									
MISSION PHASE		FUNCTION		TASK		OPERATOR ACTION		OPERATOR ACTION	
VERB	OBJECT	MODIFIER	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION	MODIFIER	OPERATOR ACTION	FUNCTION
1. INTERCEPT	COURSE	APPROACH	MANUEVER AIRCRAFT TO FOLLOW SELECTED COURSE						
2. ADJUST	CONTROL	COLLECTIVE	LOWER COLLECTIVE PITCH TO INITIATE DESCENT						
3. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO INITIATE DECELERATION						
4. ADJUST	PEDALS	ANTI-TORQUE	INCREASE RIGHT PEDAL TO COMPEN- SATE FOR TORQUE						
5. MAINTAIN	CLEARANCE	OBSTACLE	ADJUST ALTITUDE DURING DESCENT SO AS TO STAY ABOVE ANY OBSTACLES IN FLIGHT PATH						
6. MONITOR	INSTRUMENTS	ENGINE - FLIGHT	CROSS CHECK OF BOTH ENGINE AND FLIGHT INSTRUMENTS THROUGHOUT FLIGHT						
7. ADJUST	CONTROL	COLLECTIVE	INCREASE OR DECREASE COLLECTIVE PITCH AS REQUIRED TO MAINTAIN A CONSTANT ANGLE OF APPROACH ON SELECTED PATH TO POINT OF INTENDED LANDING						
8. ADJUST	CONTROL	CYCLIC	INCREASE AFT CYCLIC TO OBTAIN A CONSTANT DECELERATION TO ARRIVE AT POINT OF INTENDED LANDING AT ZERO AIRSPEED						
9. ADJUST	PEDALS	ANTI-TORQUE	ADJUST PEDAL POSITION IN CONJUNC- TION WITH CYCLIC TO MAINTAIN DESIRED HEADING AND TRIM						
10. EVALUATE									

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\* EACH MOVEMENT OF A CONTROL IS A DISCRETE TASK; HOWEVER, MOVING AND MONITORING ARE CONTINUOUS TASKS THROUGHOUT THIS SECTION



# TASK ANALYSIS

SEGMENT - HOVER  
SUBSYSTEM

MISSION PHASE - JUMP/CLIMB  
FUNCTION - HOT REFUEL

VERB	TASK OBJECT	MODIFIER	OPERATOR ACTION	CONTROL		EQUIPMENT RESP	FEEDBACK		STIMULUS INPUT	OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
				NAME	OPTIONS		HOW	WHAT					
1. ACTIVATE	SWITCH	FORCE TRIM	SWITCH FOR TRIM TO "ON" POSITION	SWITCH	OFF/ON	ACTUATOR'S FORCE GAUGE'S	D	✓	CHECKLIST CONTROL POSITION	FORCE TRIM ON/OFF	1		MUST ACTIVATE CONTROL CORRECTLY TO ACHIEVE DESIRED SYSTEM RESPONSE
2. ACTIVATE	THROTTLE		REDUCE THROTTLE TO FLIGHT IDLE POSITION	THROTTLE	OPEN, FLIGHT IDLE, CLOSED	INCREASE/DECREASE ENGINE AND ROTOR RPM	D	✓	CHECKLIST CONTROL POSITION	THROTTLE POSITION	1		
3. OPEN	CANOPY	COUPIT	INSURE CANOPY DOORS OPEN AND SECURE	DOOR LATCH	OPEN/CLOSED	OPEN DOOR	D	✓	CHECKLIST CONTROL POSITION	CANOPY POSITION	1		
4. ADJUST	CYCLIC		CENTER CYCLIC	CYCLIC	FORW/ART, LEFT/RIGHT	PITCH ATTITUDE OF AIRCRAFT, TRIM	D	✓	CHECKLIST CONTROL POSITION	CONTROL POSITION	1		
5. ADJUST	PEDALS		CENTER PEDALS	PEDALS	LEFT/RIGHT	PITCH ATTITUDE OF AIRCRAFT, TRIM	D	✓	CHECKLIST CONTROL POSITION				
6. ADJUST	COLLECTIVE		CHECK FULL DOWN	COLLECTIVE	UP/DOWN	PITCH ATTITUDE OF AIRCRAFT, TRIM	D	✓	CHECKLIST CONTROL POSITION				
7. MONITOR	INSTRUMENTS	ENGINE, TRANS-MISSION	OBSERVE GAUGES	ENGINE TRANSMISSION	SCALE RANGE	OVERVIEW POSITIONING OF RELATED SYSTEM	C	✓	CHECKLIST INSTRUMENT DISPLAYS	IN TOLERANCE READINGS	1		MUST DETECT, IDENTIFY AND EVALUATE DISCREPANCIES CORRECTLY TO MAINTAIN SAFE AIRCRAFT OPERATION
8. MONITOR	PROCESS	REFUELING	OVERVIEW ACTIONS AND INSURE SAFE OPERATION	N/A			C	✓	FUELING OPERATION	SAFE/UNSAFE OPERATION	1		MUST EVALUATE OPERATION IN TERMS OF AIRCRAFT SAFETY CORRECTLY
9. ACTIVATE	THROTTLE		INCREASE THROTTLE TO FULL RPM	THROTTLE	OPEN, FLIGHT IDLE, CLOSED	INCREASE/DECREASE ENGINE & ROTOR RPM	D	✓	CHECKLIST CONTROL POSITION	CONTROL POSITION	1		MUST ACTIVATE CONTROL CORRECTLY TO ACHIEVE DESIRED SYSTEM RESPONSE
10. CLOSE	DOOR	CANOPY	INSURE CANOPY DOOR CLOSED AND LOCKED	DOOR LATCH	OPEN/CLOSED	OPEN DOOR	D	✓	CHECKLIST CONTROL POSITION	CANOPY POSITION	1		MUST ACTIVATE CONTROL CORRECTLY TO ACHIEVE DESIRED SYSTEM RESPONSE
11. REPOSITION	AIRCRAFT		HOVER/TAXI AIRCRAFT TO PARKING SLOT	FLIGHT CONTROLS			D	✓	CHECKLIST CONTROL POSITION	CONTROL POSITION	1		MUST ACTIVATE CONTROL CORRECTLY TO ACHIEVE DESIRED SYSTEM RESPONSE

# TASK ANALYSIS

SEGMENT POST FLIGHT

MISSION PHASE TERMINATION  
FUNCTION AIRCRAFT SHUTDOWN

TASK	VERB	OBJECT	MODIFIER	OPERATOR ACTION	CONTROL		EQUIPMENT RESP	FEEDBACK				STIMULUS INPUT	CONT HELP	OPERATOR DECISION OPTIONS	ACCURACY REQUIRED	COMMENTS
					NAME	OPTIONS		M	V	A	OTHER					
1. REDUCE	LEVER	COLLECTIVE		PLACE COLLECTIVE IN THE FULL "DOWN" POSITION	COLLECTIVE	UP, DOWN	TORQUE ADJUSTMENT	D	✓			CHECKLIST CONTROL POSITION	1	UP, DOWN		MUST ACTUATE CONTROL CORRECTLY TO ACHIEVE DESIRED SYSTEM RESPONSE
2. ACTIVATE	SWITCH	FORCE TRIM		SELECT FORCE TRIM TO "ON" POSITION	FORCE TRIM	ON, OFF	ACTIVATES FORCE TRIM	D	✓			CHECKLIST CONTROL POSITION	1	OFF/ON		
3. ADJUST	CYCLIC			CENTER CONTROLS TO NEUTRAL	CYCLIC	FORWARD, LEFT, RIGHT	ADJUST PITCH ATTITUDE	D	✓			CHECKLIST CONTROL POSITION	1	FORWARD, LEFT, RIGHT		
4. ADJUST	PEDALS			CENTER CONTROLS TO NEUTRAL	PEDALS	LEFT, RIGHT	TRIM	D	✓			CHECKLIST CONTROL POSITION	1	LEFT, RIGHT		
5. ACTIVATE	SWITCH	SCAS		SELECT "OFF" POSITION	SCAS	ON, OFF	ACTIVATES SYSTEMS	D	✓			CHECKLIST CONTROL POSITION	1	ON/OFF		
6. ACTIVATE	GOVERNOR	RPM		DECREASE GOVERNOR SWITCH TO "MINIMUM"	GOVERNOR	INCREASE/DECREASE	INCREASE/DECREASE RPM	D	✓			CHECKLIST CONTROL POSITION	1	INCREASE/DECREASE/NORMAL		
7. ACTIVATE	THROTTLE	ENGINE		REDUCE THROTTLE TO "ENGINE IDLE"	THROTTLE	OPEN, CLOSED, ENGINE IDLE	CHANGE ENGINE, ROTOR RPM	D	✓			CHECKLIST CONTROL POSITION	1	OPEN, CLOSED, IDLE		
8. ACTIVATE	SWITCH	LOW RPM AUDIO		SELECT "OFF" POSITION	SWITCH	ON, OFF	ACTIVATES LOW RPM PAULTS	D	✓			CHECKLIST AUDIO SOUND	1	ON, OFF		
9. CHECK	INSTRUMENTS	ENGINE DISCOMMISSION		OBSERVE INDICATIONS ON INSTRUMENTS FOR DISCOMMISSION AS REFERENCED	GAUGES	SCALE	DISPLAYS CONDITION	D	✓			CHECKLIST INSTRUMENT DISPLAY	1	IN TOLERANCE READINGS		MUST DETECT AND INTERPRET DISPLAY READINGS CORRECTLY TO IDENTIFY SYSTEM REACTION AND/OR MALFUNCTION
10. ALLOW	COOL DOWN	ENGINE		ALLOW ENGINE IDLE FOR TWO MINUTES	N/A				✓				1	N/A		
11. ACTIVATE	SWITCHES	WACCS, NAV AIDS, LIGHTS		SELECT "OFF" POSITION FOR NON-ESSENTIAL EQUIPMENT	SWITCH	ON, OFF	ACTIVATES SYSTEMS	D	✓			CHECKLIST CONTROL POSITION	1	ON/OFF		MUST ACTUATE CONTROL CORRECTLY TO ACHIEVE DESIRED SYSTEM RESPONSE
12. ACTIVATE	SWITCH	FLIGHT IDLE STOP		PRESS FLIGHT IDLE RELEASE BUTTON AND CLOSE THROTTLE	BUTTON	ON, OFF	ACTIVATES SYSTEMS	D	✓			CHECKLIST CONTROL POSITION	1	ON/OFF		
13. ACTIVATE	THROTTLE				THROTTLE	OPEN, CLOSED, IDLE	ACTIVATES SYSTEMS	D	✓			CHECKLIST CONTROL POSITION	1	OPEN/CLOSED/IDLE		
14. ACTIVATE	SWITCH	FUEL		SELECT "OFF" POSITION FOR FUEL SWITCH	SWITCH	ON, OFF	ACTIVATES SYSTEMS	D	✓			CHECKLIST CONTROL POSITION	1	ON/OFF		
15. ACTIVATE	SWITCH	INVERTERS		SELECT "OFF" POSITION	SWITCH	ON, OFF	ACTIVATES SYSTEMS	D	✓			CHECKLIST CONTROL POSITION	1	ON/OFF/STANDBY		
16. ACTIVATE	SWITCH	GENERATOR		SELECT "OFF" POSITION	SWITCH	ON, OFF	ACTIVATES SYSTEMS	D	✓			CHECKLIST CONTROL POSITION	1	IN TOLERANCE READINGS		MUST DETECT AND INTERPRET DISPLAY READINGS CORRECTLY TO IDENTIFY SYSTEM REACTION AND/OR MALFUNCTION
17. MONITOR	GAUGES	ENGINE, TRANSMISSION		OBSERVE GAUGES FOR NORMAL COASTDOWN	GAUGES	SCALES	DISPLAYS SYSTEM CONDITION	C	✓			CHECKLIST INSTRUMENT DISPLAY				

# TASK ANALYSIS

MISSION PHASE TERMINATION			
FUNCTION PERFORM AIRCRAFT POST FLIGHT CHECK			
VERB	TASK	MODIFIER	OPERATOR ACTION
1. CHECK	SWITCHES	ELECTRICAL	CHECK ALL ELECTRICAL SWITCHES IN THE OFF POSITION
2. CHECK	FUELAGE	AIRCRAFT	INSPECT FUELAGE FOR ANY EXTERIOR DAMAGE
3. CHECK	SYSTEMS	ROTOR	INSPECT ROTOR SYSTEMS FOR UNUSUAL SIGNS OF WEAR, OIL LEAKS, ETC.
4. CHECK	ENGINE		INSPECT SEALS, LINES, FLUID LEVELS, ETC.
5. CHECK	TRANSMISSION		INSPECT SEALS, LINES, FLUID LEVELS, ETC.
6. COMPLETE	ENTRY	LOGBOOK	ENTER CONDITION OF AIRCRAFT AND SYSTEM IN LOGBOOK

SEGMENT POST FLIGHT			
SUBSYSTEM			
NAME	CONTROL	EQUIPMENT RESP	FEEDBACK
SWITCHES	ON/OFF	SECURE ELECTRICAL SYSTEM	TACTILE
AIRCRAFT	N/A	N/A	CHECKLIST
BLADE GEAR BOXES DRIVE SHAFT	N/A	N/A	CHECKLIST
TRANSMISSION	N/A	N/A	CHECKLIST
LOGBOOK	N/A	N/A	CHECKLIST

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
ON/OFF	3		MUST IDENTIFY CONTROL POSITIONS ACCURATELY TO ACHIEVE DESIRED SYSTEM RESPONSE
CONDITION IN TOLERANCE	3		MUST DETECT AND EVALUATE AIRCRAFT CONDITION ACCURATELY TO DETERMINE FLIGHT STATUS
CONDITION IN TOLERANCE	3		MUST DETECT AND EVALUATE AIRCRAFT CONDITION ACCURATELY TO DETERMINE FLIGHT STATUS
FLUIDS FULL, LOW	3		MUST DETECT AND EVALUATE AIRCRAFT CONDITION ACCURATELY TO DETERMINE FLIGHT STATUS
CONDITION IN TOLERANCE	3		MUST DETECT AND EVALUATE AIRCRAFT CONDITION ACCURATELY TO DETERMINE FLIGHT STATUS
RECORD CONTENT	3		MUST RECORD DETAILED, ACCURATE DESCRIPTION OF AIRCRAFT CONDITION

# TASK ANALYSIS

MISSION PHASE TERMINATION  
FUNCTION FILE AFTER-ACTION REPORT (DEBRIEF)

VERB	TASK		OPERATOR ACTION
	OBJECT	MODIFIER	
COMPLETE	FORM	AFTER-ACTION	WRITE IN ENTRIES ON AFTER-ACTION SHEET AS APPLICABLE
RELATE	INFORMATION		EXPLAIN PERTINENT INFORMATION TO OPSN OFFICER, INTELLIGENCE OFFICER
PLOT	DATA		PLOT ON INTELLIGENCE MAP INFORMATION ESSENTIAL TO TACTICAL OPERATIONS

SEGMENT POST FLIGHT  
SUBSYSTEM

NAME	CONTROL		EQUIPMENT RESP.	FEEDBACK		STIMULUS INPUT
	OPTIONS	NAME		V	A	
N/A	N/A	N/A	0	✓		TACTILE AFTER-ACTION FORM
N/A	N/A	N/A	0	✓		DEBRIEFING
MAP	N/A	DISPLAYS SITUATION	0	✓		TACTILE MAP

OPERATOR DECISION OPTIONS	CRIT RESP	ACCURACY REQUIRED	COMMENTS
ENTRY CONTENT	3		MOST CLEARLY AND ACCURATELY DESCRIBE REQUIRED INFORMATION
VERBAL CONTENT	3		ENEMY POSITION, NUMBER, ACTIVITY
N/A	3	ACCURATE TO NEAREST 6 DIGIT COORDINATE	TERRAIN: VEGETATION, ROADS, FLIGHT HAZARDS, LANDING ZONES, CURRENT WEATHER



CONTINGENCY: RECOVER FROM SPATIAL DISORIENTATION				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
<p>TERRAIN FEATURES NOT CORRELATING TO THOSE ON MAP.</p> <p>ETA HAS PASSED.</p> <p>DIRECTION OF FLIGHT DIFFERENT FROM THAT PLOTTED.</p>	NONE	NONE	NONE	

DECISION OPTIONS		COMMENTS	RESPONSES	
			PERCEPTUAL	MOTOR
(1) STOP, REORIENT, CONTINUE.		THE PARTICULAR SITUATION WILL DICTATE WHICH OF THESE OPTIONS WILL BE BEST AND EASIEST.	SELECT OPTION #1	PERFORM HOVER OR LANDING. VISUALLY OBSERVE AND IDENTIFY TERRAIN FEATURES.
			CORRELATE OBSERVED TERRAIN FEATURES WITH THOSE ON MAP.	
			DETERMINE LOCATION OF AIRCRAFT	PERFORM INTERSECTION. IDENTIFY AREA BENEATH AND AROUND AIRCRAFT
			SELECT FLIGHT ROUTE TO NEXT CHECKPOINT.	PLOT CHECKPOINT AND ROUTE (COURSE) ON MAP. MANEUVER AIRCRAFT ON SELECTED ROUTE.
(2) TURN AROUND AND RETURN TO LAST KNOWN LOCATION.			VERIFY ARRIVAL AT DESIRED CHECKPOINT.	CONTINUE ON ROUTE.
			SELECT OPTION #2	EXECUTE TURN AND MANEUVER AIRCRAFT BACK ON PATH PREVIOUSLY FLOWN.
				VISUALLY OBSERVE AND IDENTIFY TERRAIN FEATURES
			CORRELATE FEATURES WITH THOSE ON MAP	ARRIVE AT LAST KNOWN CHECKPOINT OR FAMILIAR TERRAIN FEATURE.
(3) CONTINUE, AND REORIENT.			DETERMINE AIRCRAFT LOCATION.	OBSERVE ORIGINAL FLIGHT ROUTE AND MANEUVER AIRCRAFT ON DESIRED ROUTE.
			SELECT OPTION #3	MANEUVER AIRCRAFT. VISUALLY OBSERVE AND IDENTIFY TERRAIN.
			CORRELATE OBSERVED FEATURES WITH THOSE ON MAP.	IDENTIFY ROUTE OF FLIGHT OF AIRCRAFT.
			DETERMINE LOCATION OF AIRCRAFT.	IDENTIFY LOCATION OF AIRCRAFT.
			SELECT ROUTE TO ORIGINALLY DESIRED CHECKPOINT.	PLOT ROUTE TO CHECKPOINT.
			DETERMINE ARRIVAL AT ORIGINALLY DESIRED CHECKPOINT.	MANEUVER AIRCRAFT ON NEW ROUTE. CONTINUE ON ROUTE.

CONTINGENCY: ENGINE FAILURE						
AVAILABLE CUES				COMMENTS	RESPONSES	
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC		PERCEPTUAL	MOTOR
2 RPM LIGHT ON 2 ENGINE RPM LOW 2 ROTOR RPM LOW 4 $N_1$ RPM LOW 3 TORQUE LOW 4 EGT HIGH/LOW	1 LOW RPM AUDIO ON 5 ENGINE NOISE DECREASE 6 ROTOR NOISE DECREASE	7 SLOPPY CONTROL RESPONSE	5 AIRCRAFT YAWS LEFT AIRCRAFT DESCENT 5 ENGINE VIBRATION DECREASE	(1) DIAGNOSIS AS ENGINE FAILURE AND PERFORM AUTOTRIM.	THE PILOT MUST LEARN TO DISTINGUISH THE CUES WHICH WILL LEAD TO CORRECT DIAGNOSIS. INCORRECT DIAGNOSIS AND REACTION WILL LEAD TO CRASH.	LOWER COLLECTIVE PITCH. INCREASE RIGHT PEDAL. ADJUST OR MAINTAIN PITCH ATTITUDE. OBSERVE LANDING AREA AND TOUCHDOWN POINT. OBSERVE RATE OF CLOSURE AND RATE OF DESCENT. ADJUST OR MAINTAIN PITCH ATTITUDE (FLARE). INCREASE COLLECTIVE PITCH TO SLOW RATE OF DESCENT AND GROUND SPEED (INITIAL). ADJUST OR MAINTAIN PITCH ATTITUDE (LEVEL). ADJUST COLLECTIVE PITCH TO CUSHION TOUCHDOWN. ADJUST PEDALS TO MAINTAIN DESIRED HEADING.







CONTINGENCY: LOW SIDE GOVERNOR FAILURE				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
2 RPM LIGHT ON 2 ENGINE RPM LOW 2 ROTOR RPM LOW 4 $N_1$ RPM NORMAL 4 TORQUE 4 EGT	1 LOW RPM AUDIO ON 3 ENGINE NOISE	6 SLOPPY CONTROL RESPONSE	4 AIRCRAFT YAWS LEFT 5 AIRCRAFT DESCENT	

DECISION OPTIONS	COMMENTS	RESPONSES	
		PERCEPTUAL	MOTOR
(1) LOW SIDE GOVERNOR FAILURE.	CUES AVAILABLE IN (1), (2), AND (3) ARE VERY SIMILAR. $N_1$ IS THE DISTINGUISHING FEATURE.  DURING NOE FLIGHT, TIME MAY NOT PERMIT AN ANALYSIS TO DETERMINE BETWEEN THE TYPE OF FAILURE.	RECOGNIZE LOW SIDE GOVERNOR FAILURE  SELECT PITCH ATTITUDE FOR MINIMUM RATE OF DESCENT.	LOWER COLLECTIVE PITCH TO MAINTAIN ROTOR RPM. ADJUST THROTTLE TO GAIN MANUAL CONTROL OF RPM  ADJUST CYCLIC TO DESIRED POSITION, OBSERVE AIRSPEED, RPM AND OBSTACLE CLEARANCE. SWITCH GOVERNOR SWITCH TO EMERGENCY POSITION.  INCREASE THROTTLE AND COLLECTIVE TO RE-ESTABLISH "NORMAL" FLIGHT ATTITUDE.
(2) ENGINE FAILURE		DETERMINE RPM FOR "NORMAL" FLIGHT OPERATIONS.  DIAGNOSIS AS ENGINE FAILURE.	PERFORM AUTOROTATION.
(3) INLET GUIDE VANES CLOSED		DIAGNOSE FAILURE  SELECT LANDING ZONE	ADJUST COLLECTIVE TO MAINTAIN RPM  SEARCH AREA FOR SAFE LANDING ZONE  PERFORM LANDING

CONTINGENCY: INLET GUIDES VANE CLOSED			
AVAILABLE CUES			
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC
2 TORQUE METER 25 PSI MAXIMUM 1 ROTOR RPM LOW 1 ENGINE RPM LOW 2 N <sub>1</sub> NORMAL 2 EGT HIGH			3 AIRCRAFT DESCENT

CONTINGENCY: INLET GUIDES VANE CLOSED			
DECISION OPTIONS	COMMENTS	RESPONSES	
		PERCEPTUAL	MOTOR
(1) INLET GUIDE VANES CLOSED. (2) LOW SIDE GOVERNOR FAILURE. (3) ENGINE FAILURE.	TORQUE AND N <sub>1</sub> SHOULD BE THE KEY CUES IN DETECTING THIS TYPE OF FAILURE.	DIAGNOSE FAILURE SELECT LANDING ZONE.	ADJUST COLLECTIVE TO MAINTAIN RPM. SEARCH AREA FOR SAFE LANDING ZONE. PERFORM LANDING.

CONTINGENCY: TAIL ROTOR FAILURE				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
3 AIRCRAFT HEADING	1 POSSIBLE NOISE FROM FAILURE	1 PEDALS JAMMED	2 AIRCRAFT YAW	
4 TRIM BALL (ABOVE 30 KTS)		1 PEDALS FREE MOVING	2 AIRCRAFT ROTATION	
4 NOSE LOW ATTITUDE			2 AIRCRAFT ROLL	
			2 AIRCRAFT PITCH ATTITUDE	

DECISION OPTIONS		COMMENTS	RESPONSES	
			PERCEPTUAL	MOTOR
(1) LAND IMMEDIATELY A) PERFORM AUTOROTATION	(1A) COMPLETE LOSS OF TAIL ROTOR THRUST (HOVER AND IN FLIGHT) LOSS OF TAIL ROTOR COMPONENTS (HOVER AND IN FLIGHT) LOSS OF TAIL ROTOR PITCH CONTROL (HOVER)		(1A) RECOGNIZE TAIL ROTOR FAILURE. DETERMINE PITCH ATTITUDE REQUIRED. EVALUATE LANDING ZONE. SELECT PITCH- OBSERVE ROTOR RPM. PULL ALTITUDE. DESCEND AND RATE OF EVALUATE TOUCH- DOWN CRITERIA. INCREASE COLLECTIVE PITCH. ADJUST OR MAINTAIN PITCH ATTITUDE (AIRCRAFT LEVEL).	REDUCE THROTTLE TO ENGINE IDLE. ADJUST OR MAINTAIN PITCH ATTITUDE. ADJUST COLLECTIVE PITCH TO MAINTAIN ROTOR RPM. OBSERVE ROTOR RPM. OBSERVE RATE OF DESCENT AND RATE OF CLOSURE. INCREASE COLLECTIVE PITCH. ADJUST OR MAINTAIN PITCH ATTITUDE (AIRCRAFT LEVEL).
B) PERFORM POWER ON APPROACH	(1B) JAMMED TAIL ROTOR PITCH CONTROL (HOVER)		(1B) RECOGNIZE TAIL ROTOR FAILURE. SELECT LANDING ZONE.	ADJUST COLLECTIVE AND THROTTLE TO ADJUST/MAINTAIN ALTITUDE AND HEADING CONTROL.
			DETERMINE TORQUE SETTING AND RPM REQUIRED TO MAINTAIN HEADING CONTROL.	ADJUST CYCLIC TO MANEUVER AIRCRAFT TO LANDING ZONE.
			SELECT TOUCH-DOWN POINT.	ADJUST THROTTLE AND COLLECTIVE TO ACCOMPLISH LANDING.
(2) RETURN TO BASE PERFORM POWER ON APPROACH	(2) LOSS OF TAIL ROTOR PITCH CONTROL (IN FLIGHT) A) PEDALS JAMMED B) PEDALS FREE MOVING		(2) RECOGNIZE TAIL ROTOR FAILURE.	OBSERVE TORQUE SETTINGS. OBSERVE AIRSPEED.
			DETERMINE TORQUE SETTING AND AIRSPEED REQUIRED FOR LANDING. AGGRAVATED CONDITION.	ADJUST COLLECTIVE PITCH AND CYCLIC TO DESIRED SETTINGS.
			SELECT FLIGHT ROUTE.	MANEUVER AIRCRAFT TO LANDING ZONE (RUNWAY).
				PERFORM LANDING [SEE (1B).]

CONTINGENCY: COMPRESSOR STALL/POWER SURGE				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
4 EGT HIGH	1 CHANGE IN ENGINE NOISE	NONE	2 UNUSUAL AIRCRAFT VIBRATION	
3 TORQUE FLUCTUATION	1 LOUD BANG		2 AIRFRAME SHUDDER	
4 $N_1$ FLUCTUATION	1 ENGINE RUMBLE		2 AIRCRAFT YAW	
3 POSSIBLE FLUCTUATION IN ENGINE RPM				

DECISION OPTIONS	COMMENTS	PERCEPTUAL	MOTOR
(1) LAND IMMEDIATELY	IN THE EVENT OF A POWER SURGE OR COMPRESSOR STALL THE BEST PROBABLE OPTION IS TO LAND AS SOON AS PRACTICAL, AT THE NEAREST SAFE LANDING AREA. THIS DECISION WILL HAVE TO BE BASED ON THE SEVERITY OF THE STALL (SURGE)		
A) PERFORM AUTOROTATION	1A) ENTERING AUTOROTATION IS PROBABLY THE WORST OPTION AND SHOULD BE USED ONLY AS A LAST RESORT		
B) PERFORM POWER ON APPROACH		RECOGNIZE POWER SURGE SELECT OPTION (1B)  SELECT A SAFE LANDING AREA AND NEUVER AIRCRAFT ON APPROACH PATH AND LANDING  RECOGNIZE COMPRESSOR STALL SELECT OPTION (1B)  SELECT A SAFE LANDING AREA AND APPROACH PATH RECOGNIZE COMPRESSOR STALL OR POWER SURGE SELECT OPTION (2)	MONITOR ENGINE INSTRUMENTS ADJUST COLLECTIVE AND THROTTLE TO GAIN MANUAL CONTROL OF RPM ADJUST FLIGHT CONTROL SO AS TO NEUVER AIRCRAFT ON APPROACH PATH AND LANDING REDUCE POWER SETTING IF POSSIBLE MONITOR ENGINE INSTRUMENTS ADJUST FLIGHT CONTROLS AND PERFORM LANDING  ADJUST FLIGHT CONTROLS TO MAINTAIN SELECTED ALTITUDE, ATTITUDE, AIRSPEED MONITOR ENGINE INSTRUMENTS
(2) RETURN TO BASE PERFORM POWER ON APPROACH		DETERMINE ATTITUDE DETERMINE AIRSPEED SELECT FLIGHT ROUTE	



CONTINGENCY: AIRCRAFT FIRE			
AVAILABLE CUES			
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC
1 SMOKE 1 FLAMES 1 FIRE WARNING LIGHT (UH-1 ONLY)	1 FLAMES CAN BE HEARD 1 SMOKE 1 SMOKE BURNING COMPONENT 1 RADIO WARNING FROM OTHER AIRCRAFT	NONE	NONE

CONTINGENCY: AIRCRAFT FIRE			
DECISION OPTIONS	COMMENTS	PERCEPTUAL	MOTOR
LAND IMMEDIATELY		RECOGNIZE AIRCRAFT FIRE SELECT LANDING ZONE AND APPROACH PATH	SEARCH AREA FOR NEAREST SAFE LANDING ZONE MONITOR INSTRUMENTS PERFORM LANDING

CONTINGENCY: COCKPIT SMOKE, FIRE OR FUMES			
DECISION OPTIONS		COMMENTS	RESPONSES
			PERCEPTUAL      MOTOR
ELIMINATE SMOKE LAND IMMEDIATELY		IF SMOKE IS HINDERING VISIBILITY, THE ELIMINATION OF SMOKE BECOMES FIRST PRIORITY	OPEN WINDOWS, DOORS AND VENTS ADJUST FLIGHT CON- TROLS TO MAINTAIN SELECTED AIRSPEED AND SIDESLIP PERFORM LANDING

CONTINGENCY: COCKPIT SMOKE, FIRE OR FUMES			
AVAILABLE CUES			
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC
1 SMOKE 1 FLAMES 1 SPARK	1 SMELL SMOKE 1 SMELL BURNING COMPONENTS 1 SMELL FUMES 1 FLAMES CAN BE HEARD 1 ARCING CAN BE HEARD	NONE	NONE

CONTINGENCY: BLADE STRIKE					RESPONSES		
AVAILABLE CUES					COMMENTS	PERCEPTUAL	
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC			PERCEPTUAL	MOTOR
3 SEE BLADE HIT OBSTACLE	3 HEAR IMPACT	1 KICK BACK IN FLIGHT CONTROL	2 AIRCRAFT VIBRATION 2 AIRCRAFT BUMP	(1) LAND IMMEDIATELY	DECISION WILL BE BASED ON SEVERITY OF AIRCRAFT VIBRATION	DETERMINE SEVERE VIBRATION	ADJUST FLIGHT CONTROLS TO MAINTAIN POSITIVE CONTROL OF AIRCRAFT
				(2) RETURN TO BASE		SELECT OPTION (1) SELECT LANDING ZONE DETERMINE MINOR STRIKE SELECT OPTION (2) SELECT AIRSPEED, ALTITUDE, FLIGHT ROUTE	SEARCH AREA FOR SAFE LANDING ZONE CHECK INSTRUMENTS PERFORM LANDING MANEUVER AIRCRAFT PERFORM LANDING

CONTINGENCY: SLUGGISH FLIGHT CONTROLS				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
NONE	1 UNUSUAL NOISE WHEN FLIGHT CONTROL IS MOVED	1 STIFFNESS OR BINDING IN FLIGHT CONTROLS	2	UNUSUAL RESPONSE OF AIRCRAFT TO FLIGHT CONTROL INPUT

DECISION OPTIONS			
COMMENTS		RESPONSES	
		PERCEPTUAL	MOTOR
THE PILOT WILL HAVE TO JUDGE THE SEVERITY OF THE MALFUNCTION AND SELECT FROM OPTIONS AVAILABLE		DETERMINE MALFUNCTION OF FLIGHT CONTROLS	
		EVALUATE SEVERITY OF MALFUNCTION	
(1) LAND IMMEDIATELY		SELECT OPTION (1)	SEARCH AREA FOR SAFE LANDING ZONE
		SELECT LANDING ZONE	PERFORM LANDING
(2) RETURN TO BASE		SELECT OPTION (2)	MANEUVER AIRCRAFT
		SELECT ALTITUDES, AIRSPEED, AND FLIGHT ROUTE	PERFORM LANDING



CONTINGENCY: HYDRAULIC SYSTEM FAILURE				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
OH58 & UH-1 2 MASTER CAUTION LIGHT ON 2 HYDRAULIC PRES-SURE LIGHT ON AH-1 2 HYDRAULIC #1 LIGHT ON 2 MASTER CAUTION ON 2 HYDRAULIC LIGHT #2 ON 2 MASTER CAUTION ON 2 HYDRAULIC #1 AND #2 LIGHTS ON 2 MASTER CAUTION ON	1 HYDRAULIC SERVOS WILL POSSIBLY MAKE NOISE 1 HYDRAULIC SERVOS WILL POSSIBLY MAKE NOISE 1 TURRET MAY OSCIL-LATE MAKING NOISE 1 HYDRAULIC SERVOS WILL POSSIBLY MAKE NOISE 1 HYDRAULIC SERVOS WILL POSSIBLY MAKE NOISE 1 HYDRAULIC SERVOS WILL POSSIBLY MAKE NOISE	3 FLIGHT CONTROLS WILL BECOME STIFF 3 EXCESSIVE FEED-BACK IN FLIGHT CONTROLS 3 PEDALS BECOME STIFF 3 CYCLIC STIFF 3 COLLECTIVE STIFF 3 FLIGHT CONTROLS WILL HAVE EXCES-SIVE FEEDBACK AND BECOME STIFF	NONE	

RESPONSES			
DECISION OPTIONS	COMMENTS	PERCEPTUAL	MOTOR
RETURN TO BASE	THE OH58 AIRCRAFT CAN BE FLOWN WITHOUT HYDRAULIC ASSIST THE UH-1 SHOULD BE FLOWN BACK TO A RUNWAY AND A RUNNING LANDING ACCOMPLISHED	RECOGNIZE HYDRAULIC FAILURE DETERMINE FLIGHT ALTITUDE, AIRSPEED AND ROUTE	ADJUST FLIGHT CON-TROLS TO MAINTAIN SELECTED ATTITUDE CHECK FOR FAILURE OF HYDRAULIC POWER SWITCH IF POWER NOT RE-STORED, HYDRAULIC POWER SWITCH OFF PERFORM RUNNING LANDING CHECK EMERGENCY COLLECTIVE HYDRAU-LIC SWITCH OFF DISENGAGE YAW SCAS AIRCRAFT WEAPONS SIGHT CIRCUIT BREAKER OUT CHECK HYDRAULIC POWER CIRCUIT BREAKER CHECK EMERGENCY COLLECTIVE HYDRAU-LIC SWITCH OFF DISENGAGE ROLL AND PITCH SCAS AIRCRAFT WEAPONS SIGHT CIRCUIT BREAKER OUT CHECK HYDRAULIC POWER CIRCUIT BREAKER AH-1 SYSTEM #1 AND #2 SELECT AIRSPEED, ALTITUDE AND FLIGHT ROUTE ADJUST FLIGHT CONTROLS TO MAINTAIN SELECTED ATTITUDE CHECK EMERGENCY COLLECTIVE HYDRAU-LIC OFF DISENGAGE SCAS PERFORM RUNNING LANDING

CONTINGENCY: CHIP DETECTOR				
AVAILABLE CUES				
VISUAL	AUDITORY/OLEFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
1 MASTER CAUTION LIGHT ON	NONE	(UH1) TRANS/ROTOR SWITCH		
2 CHIP DETECTOR LIGHT ON		(AH-1) QUADRANT LIGHT		
3 (AH-1) CHIP DETECTOR QUADRANT LIGHT				

RESPONSES			
DECISION OPTIONS	COMMENTS	PERCEPTUAL	MOTOR
(1) LAND IMMEDIATELY	THE CHOICE WILL DEPEND UPON DISTANCE TO BASE AND PILOT'S EXPERIENCE	RECOGNIZE CHIP DETECTOR	PERFORM LANDING
(2) RETURN TO BASE		SELECT LANDING AREA	
		DETERMINE CHIP LOCATION	
		RECOGNIZE CHIP DETECTOR	
		DETERMINE CHIP LOCATION	DEPRESS CHIP TEST SWITCH (UH-1)
			DEPRESS CHIP QUADRANT LIGHT (AH-1)
		SELECT FLIGHT PATH TO BASE	MANUEVER AIRCRAFT TO BASE AND PERFORM LANDING

CONTINGENCY: DC GENERATOR FAILURE					DECISION OPTIONS		COMMENTS	RESPONSES	
AVAILABLE CUES								PERCEPTUAL	MOTOR
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC						
1 MASTER CAUTION 2 DC GENERATOR LIGHT 3 ELECTRICAL INSTRUMENTS	4 SCAS CHANNELS DISENGAGEMENT (AHIG ONLY)	NONE	4 SCAS INOPERATIVE (AHIG ONLY)	UH-1 (1) SELECT STANDBY GENERATOR  (2) ATTEMPT RESET OF MAIN GENERATOR WHEN TIME AND ALTITUDE PERMIT		THE STANDBY GENERATOR IN THE UH-1 IS SUFFICIENT TO ALLOW MISSION COMPLETION	RECOGNIZE GENERATOR FAILURE  DETERMINE STANDBY GENERATOR OPERATING	RESET MASTER CAUTION LIGHT  CHECK INSTRUMENTS  CHECK CIRCUIT BREAKERS IN  GENERATOR SWITCH TO RESET, ON  CHECK CAUTION LIGHT OFF  IF GENERATOR NOT RECOVERED, SWITCH OFF	
				0458 AND AHIG ATTEMPT RESET OF MAIN GENERATOR LAND AS SOON AS PRACTICAL		AIRCRAFT SYSTEMS WILL RUN OFF BATTERY POWER BUT WILL DRAIN BATTERY VERY QUICKLY; THEREFORE LANDING AND SHUTDOWN IS NECESSARY	SHUT OFF NON-ESSENTIAL SYSTEMS  CHECK CIRCUIT BREAKERS IN  RESET GENERATOR SWITCH THEN BACK TO ON  CHECK CAUTION PANEL LIGHT OFF; CONTINUE LIGHT ON; GENERATOR SWITCH OFF  ELECTRICAL SWITCHES OFF  PERFORM LANDING	SELECT SAFE LANDING AREA	

CONTINGENCY: CLOGGED FUEL FILTER				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
1 MASTER CAUTION 2 FUEL FILTER LIGHT 3 FUEL PRESSURE GAUGE	NONE	NONE	4	POSSIBLE CHANGE IN ENGINE PERFORMANCE

DECISION OPTIONS				COMMENTS		RESPONSES	
						PERCEPTUAL	MOTOR
LAND AS SOON AS PRACTICAL				THE FUEL FILTER BYPASS LIGHT INDICATES CONTAMINATED FUEL BEING PUMPED FROM THE FUEL CELL. AS MUCH AS 30 MINUTES MAY PASS BEFORE FILTER IS ACTUALLY BYPASSED. HOWEVER, ENGINE MALFUNCTION OR FLAMEOUT MAY OCCUR AT ANY TIME		RECOGNIZE FUEL CONTAMINATION EVALUATE EFFECT ON ENGINE PERFORMANCE	CHECK ENGINE INSTRUMENTS MONITOR ENGINE PERFORMANCE
						SELECT SAFE LANDING AREA	PERFORM LANDING

CONTINGENCY: ENGINE OIL BYPASS LIGHT			
AVAILABLE CUES		RESPONSES	
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC
1 MASTER CAUTION LIGHT ON	NONE	NONE	NONE
2 ENGINE OIL BY-PASS LIGHT ON			
3 ENGINE OIL PRESSURE GAUGE READS LOW			
2 ENGINE OIL PRESSURE LIGHTS ON			
3 ENGINE OIL TEMPERATURE GAUGE READS HIGH			

CONTINGENCY: ENGINE OIL BYPASS LIGHT			
DECISION OPTIONS		COMMENTS	
		PERCEPTUAL	MOTOR
(1) RETURN TO BASE		DETERMINE WHETHER IMMEDIATE LANDING IS REQUIRED	CHECK ENGINE OIL TEMPERATURE
		SELECT OPTION (1)	CHECK ENGINE OIL PRESSURE
		SELECT AIRSPEED, ALTITUDE AND FLIGHT PATH	RESET MASTER CAUTION LIGHT
(2) LAND IMMEDIATELY		SELECT OPTION (2)	MANEUVER AIRCRAFT ALONG SELECTED ROUTE
		SELECT LANDING ZONE	SEARCH AREA FOR LANDING ZONE
			PERFORM LANDING



CONTINGENCY: TRANSMISSION OIL BYPASS (AH-1 ONLY)				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
1 MASTER CAUTION LIGHT ON	NONE	NONE	NONE	
2 TRANSMISSION OIL BYPASS LIGHT ON				
3 TRANSMISSION OIL PRESSURE OUT OF TOLERANCE				
3 TRANSMISSION OIL TEMPERATURE OUT OF TOLERANCE				

DECISION OPTIONS	COMMENTS	PERCEPTUAL	MOTOR
(1) RETURN TO BASE	ENGINE POWER SHOULD BE MAINTAINED AT ALL TIMES. DO NOT ENTER AUTO-ROTATION	SELECT OPTION (1) SELECT AIRSPEED, ALTITUDE AND FLIGHT ROUTE	CHECK TRANSMISSION OIL TEMPERATURE CHECK TRANSMISSION OIL PRESSURE RESET MASTER CAUTION
(2) LAND IMMEDIATELY		MANEUVER AIRCRAFT ON SELECTED ROUTE CHECK TRANSMISSION OIL TEMPERATURE CHECK TRANSMISSION OIL PRESSURE SELECT OPTION (2) SELECT LANDING ZONE	PERFORM LANDING

CONTINGENCY: AIRCRAFT INVERTER FAILURE				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
2 MASTER CAUTION 3 AIRCRAFT INVERTER LIGHT 1 PRESSURE INSTRUMENTS	4 SCAS CHANNELS DISENGAGE (AH-1G)	NONE	4 SCAS INOPERATIVE (AH-1G)	

DECISION OPTIONS		COMMENTS	RESPONSES	
			PERCEPTUAL	MOTOR
(1) SWITCH TO STANDBY		STANDBY INVERTER IS SUFFICIENT FOR MISSION COMPLETION. RESET- TING OF THE MAIN INVERTER CAN BE TRIED AFTER GAINING ALTITUDE OR LANDING	SELECT OPTION (1)	PLACE INVERTER IN SWITCH IN STANDBY POSITION WHEN ALTITUDE AND TIME PERMIT: RE- ENGAGE SCAS
(2) ATTEMPT RESET OF MAIN INVERTER			SELECT OPTION (2)	CHECK MAIN INVERTER CIRCUIT BREAKER, RECYCLE PLACE INVERTER SWITCH TO MAIN CAUTION LIGHT OFF IF NOT RECOVERED, SWITCH TO STANDBY
			DETERMINE MAIN INVERTER OPERATING	

CONTINGENCY: SINGLE ELEMENT ENGINE FUEL PUMP			
DECISION OPTIONS		RESPONSES	
		COMMENTS	
		PERCEPTUAL	MOTOR
LAND IMMEDIATELY		<p>A SINGLE ELEMENT FAILURE WILL ILLUMINATE THE CAUTION LIGHT. THE PILOT SHOULD BE PREPARED SINCE A FAILURE OF THE SECOND ELEMENT WILL RESULT IN ENGINE FAILURE</p>	<p>SEARCH AREA FOR SAFE LANDING ZONE</p> <p>ADJUST FLIGHT CONTROLS AND PERFORM LANDING</p>

CONTINGENCY: SINGLE ELEMENT ENGINE FUEL PUMP			
AVAILABLE CUES			
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC
1 MASTER CAUTION LIGHT ON	NONE	NONE	NONE
2 ENGINE FUEL PUMP LIGHT ON			

CONTINGENCY: FUEL BOOST PUMP FAILURE				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
1 MASTER CAUTION 2 BOOST PUMP LIGHT 3 FUEL PRESSURE GAUGE	NONE	NONE	NONE	

RESPONSES			
DECISION OPTIONS	COMMENTS	PERCEPTUAL	MOTOR
(1) CONTINUE FLIGHT	WITH A SINGLE BOOST PUMP FAILURE, AIRCRAFT WILL OPERATE NORMALLY	(1) SELECT OPTION 1	RESET MASTER CAUTION LIGHT MONITOR FUEL PRESSURE
(2) RETURN TO BASE	IF BOTH BOOST PUMPS FAIL, AIRCRAFT SHOULD BE FLOWN BACK TO BASE	(2) SELECT OPTION 2  SELECT AIRSPEED, ALTITUDE AND FLIGHT ROUTE	IF POSSIBLE, ADJUST FLIGHT CONTROLS TO MAINTAIN BELOW 4600 PRESSURE ALTITUDE MANEUVER TO BASE

CONTINGENCY: SCAS FAILURE (HARDOVER) (AH-1 ONLY)				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	ETC
1 CHANGE IN PITCH ATTITUDE	NONE	2 FEEDBACK IN FLIGHT CONTROL	2 UNUSUAL FLIGHT CONTROL POSITION	

DECISION OPTIONS		COMMENTS	RESPONSES	
			PERCEPTUAL	MOTOR
(1) RETURN TO BASE		THE AH-1 CAN BE FLOWN WITHOUT SCAS BUT CONTROL FEEL IS SOMEWHAT ANKWARD	(1) SELECT OPTION 1 DETERMINE AFFECTED SCAS CHANNEL/CHANNELS SELECT APPROPRIATE AIRSPEED, ALTITUDE, ROUTE	ADJUST FLIGHT CONTROLS TO REGAIN STABLE FLIGHT CONDITION DISENGAGE SCAS CHANNELS/CHANNEL MANEUVER AIRCRAFT AND PERFORM LANDING
(2) CONTINUE				



CONTINGENCY: ENGINE ICING (AIR SCREENS)				
AVAILABLE CUES				
VISUAL	AUDITORY/OLFACTORY	TACTILE/PROPRIOCEPTIVE	KINESTHETIC	
1 MASTER CAUTION LIGHT ON	NONE	NONE	NONE	
2 ENGINE INLET AIR (COBRA)				
2 ENGINE ICE LIGHT ON (UH-1)				
3 CREW MAY SEE BUILD-UP OF ICE				
3 INCREASE TORQUE NECESSARY				
3 EGT HIGH				
3 POWER AVAILABLE LOW				

DECISION OPTIONS				COMMENTS		RESPONSES	
						PERCEPTUAL	MOTOR
(1)	(AH-1)	OPEN AIR SCREEN MONITOR ENGINE PERFORMANCE		UNLESS THE SHIP HAS BEEN PREPARED FOR COLD WEATHER OPERATIONS (THE PARTICLE SEPARATOR REMOVED) THERE IS NOT MUCH THAT CAN BE DONE IF ICE STARTS TO ACCUMULATE ON THE SEPARATOR		(1) AH-1 DETERMINE IF CONTINUED FLIGHT IS POSSIBLE	PLACE SCREEN SWITCH TO BYPASS MONITOR ENGINE INSTRUMENTS
(2)	(UH-1)	(OH-58) LAND IMMEDIATELY				(2) DETERMINE THAT FLIGHT IS IMPOSSIBLE	MONITOR ENGINE INSTRUMENTS ADJUST FLIGHT CONTROLS SO AS TO REMAIN WITHIN LIMITS OF AIRCRAFT CHARACTERISTICS
						SELECT LANDING AREA	PERFORM APPROACH AND LANDING

## TRAINING OBJECTIVES

The detailed specifications of aircrew task requirements and contingency performance requirements provided the data base for identifying the training objectives that would have to be met to achieve aircrew proficiency in NOE operations. Each aircrew task and contingency performance requirement was examined in terms of its uniqueness to NOE operations or the degree to which it is performed differently at NOE altitudes than at higher altitudes. For each NOE-relevant task that was identified, the end product or outcome behavior was defined which would demonstrate an aviator's capability to perform that task. When quantitative criteria of the adequacy of performance could be identified, these were noted as potential standards for performance assessment.

These descriptions of end-product performance capabilities are the training objectives. They are listed in the mission phase/segment/function format so that they can be related to the task-analysis data from which they were derived.

The lists of training objectives, along with the task-analysis data, were delivered to operational units at Fort Ord, Fort Bragg, Fort Knox, and Fort Hood and to NOE flight instructors at the Army Aviation School at Fort Rucker. They reviewed both sets of data and verified the accuracy and relevance of almost all of the items in the lists of objectives. They suggested several changes and a few additions, which have been incorporated into the final lists.

## NOE TRAINING OBJECTIVES

### OBJECTIVES

### PERFORMANCE CRITERIA

#### A. PREFLIGHT

##### A.1 MISSION PLANNING

##### A.1.1 *Receive Briefing*

A.1.1.1 The aviator will be able to understand and execute a standard mission order.

Correct performance of mission defined in the briefing.

A.1.1.2 The aviator will be able to identify the local sources of all information used in the preparation of a standard mission order.

A.1.1.3 The aviator will state the definition and purpose of NOE flight as it applies to his unit's mission and the aircraft/ground units he is (will be) assigned to operate with.

A.1.1.4 The aviator will prepare a usable mission order when presented with the following data:

- Intelligence reports
- Reconnaissance reports
- Appropriate maps and charts
- Disposition of friendly forces
- Command and signal information
- Administrative and logistics information.

Mission order must contain all information required to allow another aviator to successfully perform the mission called out by the mission order.

##### A.1.2 *Select Maps*

The aviator will be able to identify, select, and obtain the map product(s) appropriate to the mission to be flown.

The aviator will be able to list the types of map products available and describe the information which can best be gathered from each type.

A.1.2.1 The aviator will identify the map products suitable for use in planning and executing NOE missions.

## OBJECTIVES

## PERFORMANCE CRITERIA

- |           |   |   |
|-----------|---|---|
| A.1.2.2   | The aviator will be able to obtain or locate the current hazard map(s) for the area(s) in which he will be operating.   |   |
| A.1.2.3   | The aviator will be able to determine the currency of available map products.   |   |
| A.1.3     | <i>Map Interpretation</i>   |   |
| A.1.3.1   | The aviator will identify and interpret contour lines and those map symbols representing geographic and noticeable cultural features of particular use in conducting NOE operations.  | Ninety percent accurate interpretation on an objective written examination.                         |
| A.1.3.2   | The aviator will describe the cartographic conventions used to depict typical geographic and cultural features on 1:50,000-scale topographic maps.  |   |
| A.1.3.3   | The aviator will demonstrate that he can interpret the coding systems used on tactical maps to plan integrated ground and air operations.   | Ninety percent correct recognition and interpretation of codes on an objective written examination. |
| A.1.3.4   | Given the eight-digit coordinates of a point, the aviator will demonstrate that he can locate that point on a 1:50,000-scale map.   | Location: $\pm 50$ meters of specified point.   |
| A.1.3.4.1 | Given the eight-digit coordinates of a point and a 1:50,000-scale map, the aviator will describe the geographic or cultural features in the vicinity of that point that he would expect to observe while approaching that point at NOE altitudes. | Eighty percent accuracy.  |
| A.1.3.5   | Given the latitude and longitude of a point, the aviator will be able to locate that point on the appropriate maps and will be able to describe that location in six-digit coordinates  | Location: $\pm 100$ meters.   |



## OBJECTIVES

A.1.3.6 Given a reconnaissance photograph of a geographic feature or check-point, the aviator will be able to locate that feature on a 1:50,000-scale map.

A.1.3.7 Given the eight-digit coordinates of a point, an appropriate chart, and a selection of reconnaissance photographs, the aviator will locate the point on the chart and select the reconnaissance photograph(s) of that point.

### A.1.4 *Receive Weather Briefing*

The aviator will list those aspects of *local* weather that have a direct affect on NOE flight and tactical mission accomplishment.

### A.1.5 *Flight Planning*

A.1.5.1 Given a mission order or field order and current maps of the area of operations, the aviator will determine a flight corridor that satisfies the requirements of a mission at NOE altitudes.

A.1.5.1.1 Given a current map and a pre-plotted course, the aviator will select and plot the location of checkpoints he believes will be visible during NOE flight along that route.

A.1.5.2 Given a properly prepared mission order, the aviator will select a route, select checkpoints, and plot a flight corridor and checkpoints on a 1:50,000-scale map using the following as a basis for selection:

- Ease of navigation
- Shortest route
- Maximum masking against radar/visual detection
- Location of friendly units
- Avoidance of friendly artillery
- Location of known enemy units
- Familiar terrain
- Hazards.

## PERFORMANCE CRITERIA

Ninety percent correct identification of feature's location.

Location:  $\pm 50$  meters.  
Ninety percent correct in photograph selection.

IP verification during a flight over the course at NOE altitudes.



## OBJECTIVES

A.1.5.3 The aviator will identify and plot alternative routes or segments that would be used to meet each of the criteria listed in A.1.5.2.

A.1.5.4 Given a standard field order or a mission order and the appropriate maps, the aviator will plot the locations of the following:

- Friendly positions
- Enemy locations
- Friendly artillery positions
- Impact areas
- Avoid areas
- Obstacles that would affect NOE flight.

A.1.5.5 Given the appropriate maps and the location and composition of a suspected enemy force, the aviator will plot the following:

- Logical location for FARPs for the specified type of mission
- Maneuver area
- Possible attack positions
- Possible OP/firing positions
- Alternate routes into and out of the attack and OP/firing positions
- Location of possible landing zones along the flight corridor
- Possible anti-helicopter ambush positions.

(As the aviator's proficiency increases, he should be encouraged to balance his navigation requirements against the security implications of profusely annotated maps falling into enemy hands.)

## PERFORMANCE CRITERIA

Point locations within 100 meters; areas within 200 meters.

## OBJECTIVES

### A.1.6 *Determine Maximum Flight Altitude*

Given an operations order, a current map with his own or a preplanned flight route, and intelligence estimates as to the nature of the opposition forces, the aviator will be able to describe the enemy weapons systems he would probably encounter and the impact of those weapons systems on the conduct/flight route of the proposed mission.

### A.1.7 *Calculate Estimates*

A.1.7.1 Given the information resulting from A.1.4.2 above, the aviator will calculate ETAs for each checkpoint and for the total flight.

A.1.7.2 The aviator will fly the mission developed under A.1.5.2 and will attempt to maintain the ETAs calculated in A.1.7.1. As required during the flight, the aviator will adjust his ETAs to compensate for weather, visibility, terrain, and changes in mission requirements.

### A.1.8 *Determine Fuel Requirement*

A.1.8.1 From the mission order, the flight route plotted on the chart, and other available data, the aviator will calculate the total distance and total time to be covered during the mission.

A.1.8.2 Based on the above, and the performance specification for his helicopter, the aviator will compute maximum fuel allowable, minimum fuel required, and the required location of FARP.

### A.1.9 *File Flight Plan*

The aviator will prepare and file a properly executed flight plan which complies with all local regulations pertaining to NOE flights.

## PERFORMANCE CRITERIA

IP comparison of selected course/altitudes against those expected on the basis of available information.

ETAs  $\pm$ three minutes, with allowances made for enroute ETA changes.

IP will determine that all unit SOPs, base SOPs, and FAA regulations have been complied with in the preparation and filing of the flight plan.

## OBJECTIVES

## PERFORMANCE CRITERIA

### A.2 MISSION COORDINATION

#### A.2.1 Brief Crew

Given a standard mission order, flight plan, and appropriate maps, the pilot will brief the crew members on the mission and will cover at least the following:

- Entry and exit routes
- CEOI in effect
- Radio call signs and frequencies
- Checkpoints/terrain features
- Possible problems
- Crew duties
- Emergency procedures
- Mission function
- Enemy situation
- Friendly situation
- Escape and evasion procedures.

#### A.2.2 Brief Passengers

The aviator will describe the briefing that would be provided to passengers to be carried during an NOE mission.

### A.3 AIRCRAFT PREFLIGHT

The aviator will perform all preflight checks and inspections required for his aircraft.

### A.4 SYSTEM CHECKS

The aviator will perform all system checks in accordance with the aircraft -10 and checklists. Particular attention will be given to:

- Power available
- Power required for hover
- Flight control response
- Normal instrument readings.

## B. DEPARTURE

### B.1 HOVER

B.1.1 The aviator will demonstrate his ability to hover the aircraft in a stable mode into the wind, crosswind, and downwind.

Downwind hover in winds up to 15 knots.

*OBJECTIVES**PERFORMANCE CRITERIA*

- B.1.2 The aviator will demonstrate his ability to conduct a hover check both in and out of ground effect.

B.2 *TAKEOFF*

- B.2.1 The aviator will demonstrate his ability to perform a maximum performance takeoff.
- B.2.2 The aviator will demonstrate his ability to perform a confined area takeoff.
- B.2.3 The aviator will demonstrate his ability to perform a downwind takeoff.

C. *ENROUTE*

C.1 *MONITOR/ADJUST AIRSPEED*

- C.1.1 The aviator will demonstrate his ability to accurately navigate within the airspeed envelope that his assigned aircraft and mission require during NOE flight.
- C.1.2 The aviator will demonstrate his ability to adjust his airspeed at NOE altitudes to the terrain conditions of the area he is operating in.

Continuous knowledge of relative position  $\pm 100$  meters during NOE flight at airspeeds assigned by the Instructor Pilot.

C.2 *MONITOR/ADJUST ALTITUDE*

The aviator will be able to select, adjust, and maintain the aircraft at a prescribed altitude above the terrain.

As close to earth's surface as terrain features and vegetation allow, and as low as the tactical situation requires.

- C.2.1 The aviator will be able to list the altitude restrictions applicable to NOE operations in his aircraft.
- C.2.2 The aviator will identify the types of terrain obstacles/flight hazards common to the environment in which he is/will be flying and will be able to describe the action to be taken to clear these obstacles.



## OBJECTIVES

## PERFORMANCE CRITERIA

- C.2.3 The aviator will describe the limits and accuracy of the altitude sensing systems in his aircraft and describe the procedure for checking those systems prior to flight (including radar altimeter if installed).
- C.2.4 The aviator will be able to describe the external visual cues to be used in maintaining his aircraft at NOE altitudes in mountainous terrain, rolling hills, and flat lands.
- C.2.5 The aviator will be able to execute a quick stop into the wind without changing altitude.
- C.2.6 The aviator will be able to execute a downwind quick stop without changing altitude.
- C.2.7 The aviator will describe the procedures/techniques to be employed to prevent his aircraft from being subjected to zero g or negative g forces.
- C.2.8 The aviator will describe the conditions under which divergent roll can occur in his assigned aircraft and what the effects can be. He will describe corrective actions to be applied to prevent/cure the occurrence of this condition.

Quick stops will terminate in a hover and will not result in the aircraft rising above the terrain features being used for masking.

## C.3 MONITOR/ADJUST HEADING

- C.3.1 The aviator will demonstrate that he can select and maintain an appropriate ground track, from a chart or from verbal commands, while operating NOE.
- C.3.2 The aviator will demonstrate that he can navigate a preplanned route while operating NOE and taking maximum advantage of available cover from geographic, vegetation, or cultural features.

Checkpoint location  $\pm 50$  meters.



*OBJECTIVES**PERFORMANCE CRITERIA**C.4 MONITOR INSTRUMENTS*

The aviator will check flight instruments for appropriate indications.

All items checked. All conditions reported accurately.

*C.5 FLIGHT SAFETY*

The aviator must demonstrate his ability to detect and identify possible flight hazards around his aircraft.

- C.5.1 The aviator will fly a route selected by the IP/check pilot and identify all flight hazards occurring along his line of flight. He will communicate the nature and location of all these hazards to the IP and will adjust aircraft speed, heading, and/or altitude to avoid these hazards.

Hazard clearance procedures in accordance with applicable safety procedures, tactics, and aircraft performance parameters.

- C.5.2 The aviator will describe the cues to common hazards (wires, etc.) in the area he will be flying.

- C.5.3 The aviator will be able to detect other aircraft (friendly/enemy) in the NOE environment and perform maneuvers required to avoid collision/engagement.

*C.6 MAINTAIN MASK*

The aviator will demonstrate his ability to execute a preplanned NOE mission without exposing his aircraft to radar and/or visual detection (see D.5.1).

- C.6.1 Given a preplanned flight plotted on a 1:50,000-scale map, the aviator will be able to identify and describe the features that will be able to provide masking for his aircraft during each segment of the flight.

- C.6.1.1 Given a preplanned flight plotted on a 1:50,000-scale map, the aviator will be able to identify possible anti-helicopter ambush sites along his proposed flight path.

## OBJECTIVES

## PERFORMANCE CRITERIA

- C.6.1.2 The aviator will describe how to use vegetation for physical and color masking during NOE flight.
- C.6.2 While in flight, the aviator will identify terrain features that will mask his aircraft from visual and/or radar detection, given probable location of observer or radar unit.
- C.6.2.1 The aviator will verbally describe the characteristics of the surrounding terrain that are masking his aircraft from visual/radar detection.
- C.6.3 The aviator will adjust aircraft altitude, airspeed, and heading to maintain masking while flying a given area.

Aircraft masked from radar/visual detection while in flight. Exposure to ground observers for less than ten seconds.

## C.7 & C.8 MONITOR/MAINTAIN OBSTACLE CLEARANCE

- C.7.1 The aviator will describe the current operational and safety regulations governing obstacle clearance for the area he is operating in.
- C.7.2 The aviator will demonstrate the prescribed clearances and obstacle avoidance in his helicopter, while flying in proximity to preselected obstacles.
- C.7.3 The aviator will demonstrate confined area hovering, takeoffs, and landings.
- C.7.4 The aviator will describe and demonstrate the proper crew coordination and procedures to be used during enroute flight.

Vertical and horizontal clearances in accordance with the operational and safety regulations in force.

Vertical and horizontal clearances in accordance with the operational and safety regulations in force.

## OBJECTIVES

## PERFORMANCE CRITERIA

- C.7.5 While in flight, the aviator will verbally identify or acknowledge the location of all potential flight hazards in proximity to his line of flight.
- C.9 *DETERMINE POSITION*
- The aviator will demonstrate his ability to determine his position at all times during the NOE missions he is required to perform.
- C.9.1 While in flight, the aviator will be able to locate and identify prominent visible terrain features on his map.
- C.9.2 While in flight, the aviator will be able to estimate his distance and bearing from an observed terrain feature.
- C.9.3 While in the aircraft, the aviator will be able to plot a location line intersection.
- C.9.4 The aviator will successfully locate and identify 100% of all preplanned checkpoints while flying NOE.
- C.9.5 When provided with an enroute flight plan change, the aviator will be able to select a route to meet the changed mission requirements and successfully navigate that route within the constraints imposed by the new mission requirements.
- C.9.5.1 At any time during an NOE mission, the aviator will be able to locate his position by visual reference or intersection.
- C.9.5.2 The aviator will select the best route to his new destination. The selected course must answer the specific mission requirements associated with the mission change order.
- ±50 meters of intended flight path.
- Position of terrain features on the map within 100 meters.
- Position of aircraft in six-digit coordinates of indicated position.
- Correlation of planned route checkpoints against those identified in flight with 100% accuracy.
- Position of aircraft marked on the map ±100 meters of indicated position.

## *OBJECTIVES*

- C.9.6 The aviator will demonstrate his ability to recognize when he is disoriented and will be able to recover from that disorientation.
- C.9.7 The aviator will demonstrate the procedures for bringing his aircraft back onto his planned route or plotting a new course from his present position to his destination.
- C.9.7.1 The aviator will locate his position through visual reference, intersection, or barrier search.
- C.9.7.2 The aviator will be able to identify barrier features and locate them on his map.
- C.9.7.3 The aviator will perform a location line intersection to determine his position (with respect to the barriers).
- C.9.7.4 The aviator will be able to locate and identify a checkpoint close to his aircraft position which is identifiable on his map.
- C.9.7.5 The aviator will plot a course from this checkpoint to the next checkpoint on his original course or to his destination (see C.9.5).
- C.9.7.6 The aviator will be able to recognize his disorientation, perform 180° turn, and return to last known location or checkpoint.

## *C.10 INTERPRET TERRAIN*

The aviator will be able to interpret the nature and characteristics of terrain viewed at NOE altitudes in terms of his mission requirements; specifically he must be able to identify and relate prominent terrain features to preselected checkpoints and cartographic features on the maps and charts he is being trained with.

## *PERFORMANCE CRITERIA*

Recognition of deviation from preplanned route by an unknown amount.

Position  $\pm 50$  meters.

Position  $\pm 50$  meters.

Checkpoint to map correlation =  $\pm 50$  meters.

Aviator should not exceed .5 kilometer deviation from preplanned route.



## OBJECTIVES

## PERFORMANCE CRITERIA

- C.10.1 The aviator will be able to list the:
- geographic,
  - vegetation,
  - hydrographic, and
  - cultural
- features that are expected to be of the most use while navigating NOE in the area of operations.
- C.10.2 The aviator, while in flight at NOE altitudes, will be able to correctly identify geographical features and correlate them with the cartographic representations on his 1:50,000-scale map.
- C.10.3 The aviator will demonstrate that he can read and interpret the categories of aerial photography that his assigned mission(s) require.
- C.10.4 The aviator will demonstrate his ability to prepare the type of hand-drawn maps that his assigned mission(s) require.

## C.11 CREW COORDINATION

The aviator will demonstrate and maintain a system of crew coordination to be utilized during all NOE flights.

In accordance with local SOPs.

- C.11.1 The pilot will brief the copilot/navigator, observer, and/or crew chief on their responsibilities during NOE operations. The communications discipline and procedures to be used will be stated.
- C.11.2 Crew members will establish a continuous dialogue on position, flight path, checkpoints, surrounding terrain, enemy activity, and obstacles.
- C.11.3 Crew members will advise the pilot of all required course changes and will describe the type of terrain/checkpoints to be expected.

Standard phraseology for terrain features must be adopted between crew members.



## OBJECTIVES

## PERFORMANCE CRITERIA

- C.11.4 Copilot/navigator will be responsible for radio monitoring and assist in instrument crosschecks.

### C.12 *COMMUNICATE POSITION AND CLEARANCE INFORMATION*

The aviator will demonstrate the procedures for communicating position information and requesting clearance and hazard information while enroute.

In accordance with CEOI in effect.

- C.12.1 The aviator will list the data elements that compose a tactical position report.
- C.12.2 The aviator will request an artillery clearance in accordance with local procedures.
- C.12.3 The aviator will list the information to be contained in artillery and TAC air advisories.
- C.12.4 Given a chart of the area of operations and an artillery advisory message, the aviator will be able to plot the location of impact areas, and gun target lines.
- C.12.5 The aviator will demonstrate that he can handle his assigned flight tasks (aircraft control/navigation) and handle the communication load expected during his assigned missions.

One-hundred percent accuracy.

One-hundred percent accuracy.

One-hundred percent accuracy.

Safe, accurate performance of assigned duties.  
Completion of mission.

## D. ENGAGEMENT

### D.1 *MANEUVERS*

The aviator will demonstrate his ability to perform all of the listed maneuvers in a proficient and safe manner. The emphasis in all of these maneuvers will be on positive control of the aircraft.

#### D.1.1 *Manuever into OP*

- D.1.1.1 Given a map of the area of operations, the aviator will be able to locate/select several possible OPs.

Position located on map, identified by six-digit coordinates.

## OBJECTIVES

## PERFORMANCE CRITERIA

- |           |  |  |
|-----------|--|--|
| D.1.1.2   | The aviator will plot a course to the selected OP.   |  |
| D.1.1.3   | The aviator will navigate the selected course to the OP (see C)  |  |
| D.1.1.4   | The aviator will visually locate the position of the OP.   | OP location $\pm 50$ meters.   |
| D.1.1.5   | The aviator will select an approach path to the OP. The pilot will verbally describe the approach direction and the route to be flown.                           | The selected path should offer maximum protection from enemy observation.  |
| D.1.1.6   | The aviator will be able to estimate the wind direction and force in the OP area.  | Wind direction $\pm 45$ degrees; gusty vs steady.  |
| D.1.1.7   | The aviator will demonstrate his ability to estimate the size of a hover "hole" and to hover his aircraft in a confined area.                                    | Hover aircraft in a confined area with a blade tip clearance of 10 feet.   |
| D.1.1.7.1 | The aviator will hover the aircraft in the OP  | Stable hover at selected altitude.   |
| D.1.2     | <i>Unmasking Maneuver</i><br>The aviator will be able to describe the nature of the unmasking maneuver, its purpose, and the steps required for its performance. |  |
| D.1.2.1   | The aviator will demonstrate unmasking while positioned at least two rotor diameters from a masking feature.   | IP assessment: <ul style="list-style-type: none"><li>● Maneuver should be performed smoothly with the aircraft ascending and descending vertically.</li><li>● Aircraft drift should be as close to zero as possible.</li><li>● Aircraft should rise to an altitude just sufficient for the pilot/observer to establish a line of sight to the target area.</li></ul> |
| D.1.2.2   | The aviator will demonstrate unmasking while positioned within one rotor diameter from masking features.   | (Same as D.1.2.1.)   |

## OBJECTIVES

- D.1.2.3 The aviator will hover aircraft in a stable mode.

### D.1.3 Mask Maneuver

The aviator will be able to describe the nature of the mask maneuver, its purpose, and the steps required for its performance.

- D.1.3.1 The aviator will describe and perform all required instrument checks prior to descending.

- D.1.3.2 The aviator will select an appropriate position to demonstrate the masking maneuver.

- D.1.3.3 The aviator will move the aircraft into the masked position.

- D.1.3.3.1 The aviator will adjust the anti-torque pedals to maintain directional heading, check rate of descent, obstacle clearance, and mask provided.

### D.1.4 Evasive Maneuvers

- D.1.4.1 The aviator will describe the nature of the evade-drop maneuver, its purpose, and the steps required for its performance.

- D.1.4.1.1 The aviator will demonstrate the evade-drop maneuver while operating NOE.

## PERFORMANCE CRITERIA

Heading:  $\pm 5^\circ$ ;  
Altitude: IP assessment.

Pilot must check:

- Tach
- Warning lights
- Engine instruments
- Fuel quantity
- Force-trim switch
- Torque

Selected position must provide masking for aircraft and conform to the safety regulations in force.

Aircraft is masked from point(s) of visual and radar detection as designated by IP.

At the instructor's command, the pilot will position the aircraft as low as possible and place some masking feature between his aircraft and the indicated threat. Applicable safety regulations will be considered and flight obstacles must be avoided. Rate of descent should not exceed 200 feet per minute.

## OBJECTIVES

D.1.4.2 The aviator will describe the nature of the evade-dash maneuver, its purpose, and the steps required for its performance.

D.1.4.2.1 The aviator will demonstrate the evade-dash maneuver while operating NOE.

D.1.5 *Select and Move to New OP*  
(see D.1.1)

## D.2 PRE-ATTACK

The aviator will demonstrate his ability to rapidly and accurately perform all of the procedural checks and maneuvers listed below. The emphasis in all of these objectives is accuracy in the procedural checks and positive control of the aircraft during all maneuvers.

D.2.1 The aviator will demonstrate the correct procedures for contacting the types of units he will be expected to support in his assignment/area of operations (see C.12).

D.2.2 The aviator will locate the selected attack/observation position.

D.2.2.1 The aviator will plot the location of his attack/observation position.

D.2.2.2 The aviator will visually identify the OP or checkpoint.

D.2.2.3 The aviator will select a route into and out of the OP.

## PERFORMANCE CRITERIA

At the instructor's command, the pilot will perform a high-speed dash in an indicated or selected direction while maintaining NOE altitude. Applicable safety regulations will be considered and flight obstacles must be avoided.

Communications procedures will be in accordance with present CEOI.

Location of OP coordinates  $\pm 50$  meters.

Location of OP/checkpoint  $\pm 50$  meters.

Route selected must provide maximum masking from some indicated source of detection.



## OBJECTIVES

## PERFORMANCE CRITERIA

### G.6 COMPRESSOR STALL

- G.6.1 The aviator will list the symptoms/ cues that indicate a compressor stall condition exists/has occurred. Due to the momentary nature of most compressor stalls, the aviator must learn to discriminate between those that are momentary and those that will/have resulted in an engine failure.
- G.6.2 The aviator will demonstrate the steps to be taken to correct for compressor stalls.

### G.7 TAIL ROTOR FAILURES

- G.7.1 The aviator will identify the symptoms/ cues that indicate a tail rotor failure has occurred.
- G.7.2 The aviator will demonstrate the procedures to be executed to bring the aircraft under control after a tail rotor failure at low altitude/ high airspeed and low altitude/low airspeed.
- G.7.3 Given photographs of several areas typical of the local region where NOE missions are conducted, the aviator will indicate where they would try to land the helicopter after a tail rotor failure.

### G.8 SHORT SHAFT FAILURE

- G.8.1 The aviator will identify the cues that indicate a short shaft failure has occurred.
- G.8.2 (See G.3.)

### G.9 ENGINE FIRE/ELECTRICAL FIRE/FUEL FUMES

### G.10 DC GENERATOR FAILURE

### G.11 CLOGGED FUEL FILTER

### G.12 CHIP DETECTOR LIGHT ON

### G.13 STICKY FLIGHT CONTROLS

Each of these contingencies/ emergencies can and will occur during NOE operations. By their nature, and by the nature of the possible responses that the aviator can make to them, the training objectives for these contingencies/



## OBJECTIVES

- D.2.3 The pilot will perform a hover check prior to entering the OP (see B.1.2).

- D.2.4 The aviator will demonstrate the procedures for activating and arming the weapons system(s) aboard his aircraft.

- D.2.5 *Landing Zone (LZ) Reconnaissance*  
The aviator will describe and demonstrate a landing zone reconnaissance.

- D.2.5.1 The aviator will estimate the length and width of the LZ.
- D.2.5.2 The aviator will note the location, size, type, and number of obstacles in the LZ.
- D.2.5.3 The aviator will note the direction and nature of the wind.
- D.2.5.4 The aviator will note the approach direction for the LZ.
- D.2.5.5 The aviator will select touchdown point and departure route.

## PERFORMANCE CRITERIA

During training, hover checks will be practiced at several altitudes (e.g., 25 feet, 10 feet, five feet); in practice, the hover check will be made at the altitude to be maintained in the OP.

### IP assessment:

- All items checked, all conditions reported accurately
- During checks, aircraft must be hovered correctly and held stable
  - altitude  $\pm 2$  feet
  - heading  $\pm 5^\circ$ .

Procedure 100% correct with no omissions. Applicable range, exercise, or operational safety procedure must be followed.

Length and width dimensions  $\pm 20\%$ .

Direction  $\pm 45$  degrees; gusty vs steady winds.

## OBJECTIVES

## PERFORMANCE CRITERIA

### D.3 TARGET ACQUISITION

#### D.3.1 Receive Target Data

The aviator will demonstrate his proficiency in operating the communications equipment installed in his aircraft and his ability to record and interpret target data.

Communications procedures in accordance with current CEOI.

#### D.3.2 Perform Observation Maneuver(s)

The aviator will demonstrate the maneuvers used during observation missions.

IP assessment.

#### D.3.3 Perform Visual Reconnaissance

The aviator will describe and demonstrate an area search reconnaissance.

##### D.3.3.1 The aviator will be able to plot the limits of the search area on his map.

±50 meters.

##### D.3.3.2 The aviator will describe and demonstrate the flight pattern to be flown over a designated area.

Search area visible.

##### D.3.3.3 The pilot/observer/copilot team when conducting an area search at NOE altitudes over unfamiliar terrain, will detect, identify and report all aggressor activities and objects.

Location: ±100 meters;  
size;  
activity;  
direction of movement.

##### D.3.3.5 The aviator will avoid enemy detection while conducting an area search against aggressor forces.

IP assessment; ground observer reports.

##### D.3.3.6 The aviator will prepare a written area reconnaissance report.

### D.4 WEAPONS DELIVERY

#### D.4.1 Attack Target

The aviator will describe the procedures and tactics to be employed in attacking point and area targets with the weapons aboard his aircraft.

Arming procedures--100% with no omissions. Maneuver altitudes ±10 feet

## OBJECTIVES

- D.4.1 On a helicopter firing range, the cont. aviator will demonstrate the procedures and maneuvers employed in attacking point and area targets.
- D.4.1.1 Acquire target.
- D.4.1.1.1 The aviator will demonstrate the procedures required to activate the weapon tracking/sight system(s) aboard his aircraft.
- D.4.1.1.2 The aviator will demonstrate that he can visually acquire moving and stationary targets with the sight/tracking system installed in his aircraft. The aviator will demonstrate this at a hover and during forward flight.
- D.4.1.2 Select armament.
- D.4.1.2.1 The aviator will describe the capabilities of armament system(s) aboard his aircraft and other aircraft assigned to his unit.
- D.4.1.2.2 The aviator will describe the weapons to be used against various types of point and area targets.
- D.4.1.2.3 The aviator will demonstrate the procedures required to activate the weapon system(s) aboard his aircraft, and to select specific weapons or weapon mixes.
- D.4.1.3 Track target.  
The aviator will demonstrate his ability to track an acquired target with the weapon-tracking system installed aboard his aircraft.
- D.4.1.4 Fire weapon(s).  
The aviator will demonstrate the procedures required to fire the weapon(s) aboard his aircraft.

## PERFORMANCE CRITERIA

- Select direction of attack, demonstrate hovering fire.
- One-hundred percent accuracy, no omissions.
- IP assessment.
- Maximum range; maximum effective range; ammunition types available.
- One-hundred percent accuracy, no omissions.
- One-hundred percent accuracy, no omissions.

## OBJECTIVES

- D.4.1.4.1 On a properly supervised helicopter firing range, the aviator will fire selected weapons against point and area targets (see D.4.2).
- D.4.1.4.2 The aviator will adjust the aircraft flight path to bring/hold the weapon system on target.
- D.4.1.5 Report target damage.  
The aviator will prepare/transmit a target damage assessment message.
- D.4.2 *Attack Maneuvers*  
The aviator will demonstrate the procedures to be followed in executing each of the following engagement maneuvers.
  - D.4.2.1 Hover/mask cresting fire.
    - D.4.2.1.1 On a properly supervised helicopter firing range, the aviator will position his aircraft with a suitable mask/terrain feature between the aircraft and target.
    - D.4.2.1.2 Upon receipt of a fire order/range clearance, the aviator will unmask and fire the selected weapon (see D.4.1.4).
    - D.4.2.1.3 The aviator will mask the aircraft and move to the next firing position or off the range.
  - D.4.2.2 Running fire.
    - D.4.2.2.1 On a properly supervised helicopter firing range, the aviator will fly toward the target at the specified airspeed and altitude.
    - D.4.2.2.2 After crossing the firing line, the aviator will fire the selected weapon(s) against the targets that are visible.

## PERFORMANCE CRITERIA

Must equal or exceed local range standards for accuracy.

In accordance with the local CEOI and SOP.

Height above masking feature should be just enough to allow target acquisition and safe weapons firing.



## OBJECTIVES

## PERFORMANCE CRITERIA

D.4.2.2.3 During the firing run, the aviator will adjust aircraft attitude, speed, and direction to bring or hold the weapon system on target.

D.4.2.2.4 The aviator will report target damage.

D.4.2.3 Attack patterns and formations.

The aviator will describe and demonstrate the performance required of lead and wing during the following maneuvers.

IP assessment.

D.4.2.3.1 The aviator will describe and demonstrate a properly executed racetrack pattern against a designated target location. The aviator will indicate the firing points and disengagement points of the pattern.

D.4.2.3.2 The aviator will describe and demonstrate a properly executed figure-eight pattern against a designated target location. The aviator will indicate the firing points and disengagement points of the pattern.

D.4.2.4 The aviator will describe how to apply suppressive fire while operating NOE.

D.4.2.5 The aviator will describe and demonstrate the procedures for designating and handing-off targets with the systems available on his aircraft.

One-hundred percent accuracy, no omissions.

D.4.2.6 The aviator will describe the conditions under which an engagement would be broken off and will demonstrate the procedures and maneuvers to be employed in breaking off his assigned mission.

## D.5 ENEMY DETECTION

### D.5.1 *Receive Enemy Detection*

## OBJECTIVES

## PERFORMANCE CRITERIA

D.5.1 cont. The aviator will be able to describe the threat that he will face in a mid-intensity conflict. He should be knowledgeable concerning both the threat force makeup (personnel and equipment) and its fire power capabilities.

D.5.1.1 The aviator will be able to describe the visual cues and/or auditory cues that will provide indications that his helicopter has been detected.

D.5.1.2 The aviator will describe and demonstrate the evasive maneuvers to be used against the various threats that can be expected in a mid-intensity conflict.

D.5.2 *Receive Hit*

D.5.2.1 The aviator will describe the typical visual and/or auditory cues that indicate the helicopter has sustained damage from enemy fire.

IP assessment.

D.5.2.2 The aviator will describe the checks to be made to determine the extent of aircraft damage after taking a hit.

D.5.2.3 The aviator will describe conditions under which they would:

- autorotate
- land immediately
- continue mission
- return to base.

E. RETURN TO BASE

E.1 *DETERMINE ROUTE OF FLIGHT* (see A.1.4, A.1.5, and A.1.6)

E.2 *NAVIGATE NOE* (see C)

E.3 *NOE FLIGHT* (see C)

## OBJECTIVES

## PERFORMANCE CRITERIA

### F. TERMINATION

#### F.1 *PERFORM PRE-LANDING CHECK*

#### F.2 *PERFORM LANDING*

F.2.1 The aviator will demonstrate that he can properly and safely land the aircraft under normal operating conditions.

F.2.2 The aviator will demonstrate that he can properly and safely execute a running landing.

F.2.3 The aviator will demonstrate that he can properly and safely execute a downwind landing in winds up to 15 knots.

#### F.3 *POST FLIGHT*

F.3.1 The aviator will demonstrate the proper procedure for performing "hot refuel" operations for his assigned aircraft.

To be performed in accordance with applicable SOPs and safety regulations.

#### F.3.2 *Aircraft Post Flight*

The aviator will perform a thorough post-flight inspection with particular emphasis given to:

- Main rotor and tail rotor blades
- Rotor blade attaching points
- Gearbox condition and mounting points
- Stress panels
- Skids and belly of aircraft

F.3.3 The aviator will demonstrate the preparation of the debriefing materials required for his assigned mission(s).

### G. CONTINGENCIES

#### G.1 *EMERGENCY PROCEDURES*

The aviator will list those emergencies which are the most critical during NOE operations and missions and indicate the action to be taken in the event these emergencies occur while the aircraft is being operated NOE.

*OBJECTIVES*

*PERFORMANCE CRITERIA*

G.2 *RECOVER FROM DISORIENTATION* (see C.9, C.10, and C.11)

G.3 *ENGINE FAILURE*

G.3.1 The aviator will identify the symptoms/cues that indicate that an engine failure has occurred. The symptoms/cues will be listed in the order in which they could be expected to occur.

G.3.2 The aviator will demonstrate the procedures to be taken to correct for the engine failure, or to control the aircraft without power.

G.3.3 The aviator will demonstrate successful autorotations under the following conditions:

- Low altitude, low airspeed
- High hover
- Low altitude, high airspeed
- Hover

The specific altitudes and airspeeds at which autorotations will be trained will be determined by local safety regulations.

G.3.4 The aviator will be able to describe the effects of variations in aircraft attitude, altitude, and speed on autorotation performance in NOE work.

G.3.5 The aviator will describe the procedures to be followed in those situations where a successful autorotation is highly unlikely.

G.3.6 Given photographs of several areas typical of the local areas where NOE missions are conducted, the aviator will indicate where they would try to place the helicopter in the event of an engine failure.

G.4 *LOW SIDE GOVERNOR FAILURE* (see G.3)

G.5 *ENGINE DRIVEN FUEL PUMP FAILURE* (see G.3)



## OBJECTIVES

## PERFORMANCE CRITERIA

### G.6 COMPRESSOR STALL

- G.6.1 The aviator will list the symptoms/ cues that indicate a compressor stall condition exists/has occurred. Due to the momentary nature of most compressor stalls, the aviator must learn to discriminate between those that are momentary and those that will/have resulted in an engine failure.
- G.6.2 The aviator will demonstrate the steps to be taken to correct for compressor stalls.

### G.7 TAIL ROTOR FAILURES

- G.7.1 The aviator will identify the symptoms/ cues that indicate a tail rotor failure has occurred.
- G.7.2 The aviator will demonstrate the procedures to be executed to bring the aircraft under control after a tail rotor failure at low altitude/ high airspeed and low altitude/low airspeed.
- G.7.3 Given photographs of several areas typical of the local region where NOE missions are conducted, the aviator will indicate where they would try to land the helicopter after a tail rotor failure.

### G.8 SHORT SHAFT FAILURE

- G.8.1 The aviator will identify the cues that indicate a short shaft failure has occurred.
- G.8.2 (See G.3.)

### G.9 ENGINE FIRE/ELECTRICAL FIRE/FUEL FUMES

### G.10 DC GENERATOR FAILURE

### G.11 CLOGGED FUEL FILTER

### G.12 CHIP DETECTOR LIGHT ON

### G.13 STICKY FLIGHT CONTROLS

Each of these contingencies/ emergencies can and will occur during NOE operations. By their nature, and by the nature of the possible responses that the aviator can make to them, the training objectives for these contingencies/

## OBJECTIVES

- G.14 ENGINE/TRANSMISSION OIL BYPASS LIGHT ON
- G.15 HIGH SIDE GOVERNOR FAILURE
- G.16 INLET GUIDE VANES CLOSED
- G.17 TAIL ROTOR, FIXED PITCH
- G.18 SCAS HARDOVER
- G.19 HYDRAULIC FAILURE
- G.20 LOSS OF COMMUNICATIONS
- G.21 AC INVERTER FAILURE
- G.22 BOOST PUMP FAILURE
- G.23 AIRSCREEN ICING
- G.24 LOSS OF INSTRUMENTS
- G.25 BLADE STRIKE
  - G.25.1 The aviator will list the radius or diameter of the rotor disc; and when presented with visual representations of real world obstacle clearance situations, will be able to judge whether or not the helicopter can safely pass that obstacle.
  - G.25.2 The aviator will describe and demonstrate the proper techniques for approaching, judging, and passing between, under, or around the following classes of obstacles:
    - Wires
    - Trees
    - Buildings.
  - G.25.3 The aviator will describe the procedures to be employed to minimize aircraft damage if a wire/tree strike is imminent and cannot be avoided.

## PERFORMANCE CRITERIA

emergencies would be identical to the objectives to be met in training for helicopter flight at altitude.

It should be stressed that the difference is the very short response times that the aviator will have to deal with emergencies while operating NOE. This shortened response time necessitates becoming extremely familiar with the symptoms leading to or associated with these contingencies/emergencies. *The key is quick and accurate diagnosis.*

IP assessment. No blade strikes. Clearances and procedures called out by local regulations will be adhered to at all times. Local procedures regarding blade strike procedures and reporting will be covered in detail.

*OBJECTIVES*

*PERFORMANCE CRITERIA*

- G.25.4 The aviator will demonstrate that he recognizes the level of vibration that indicates an immediate landing is required.
- G.25.5 The aviator will recognize the amount of blade strike damage that would:
- Allow the aircraft to be flown to base
  - Require patching prior to flight
  - Be too severe to be flown without major repair/replacement.

G.26 *PSYCHO-PHYSIOLOGICAL FACTORS*

The aviator will be able to describe the various psychological and physiological problems he can encounter during NOE operations in his assigned missions. He will list some procedures that can be employed to aid in combating adverse psychological and physiological effects of NOE operations.